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URBANA

REPORT OF INVESTIGATIONS—NO. 121

ILLINOIS MINERAL INDUSTRY IN 1945

BY

WALTER H. VOSKUIL, DOUGLAS F. STEVENS,
AND NINA T. HAMRICK

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Topographic Mapping in Cooperation with the United States Geological Survey.

This report is a contribution of the Mineral Economics Section.

Aug. 1, 1946

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ILLINOIS MINERAL INDUSTRY IN 1945

BY

WALTER H. VOSKUIL, DOUGLAS F. STEVENS, AND NINA T. HAMRICK

INTRODUCTION

THE ILLINOIS MINERAL INDUSTRY is a key factor in creating and supporting the industrial activity in Illinois and, to considerable extent, in other states of the Upper Mississippi Valley. The primary materials of industrial production—fuels and iron ore, the latter from the Lake Superior district—are available in abundant quantities and are assembled for processing at a low cost on Lake Michigan near the large market of Chicago and of smaller cities in the industrial belt. There are abundant cheaply mined and good quality coals at points accessible to manufacturing centers. In addition to this, certain minerals essential to the processing of primary steel, such as refractory materials and fluxes, are also present in the area, together with a variety of mineral products for foundry, chemical, construction, and other uses.

This wide array of manufacturing industries lies in the center of one of the most efficient and low-cost food producing areas in the United States, if not in the world. A fertile soil has provided an area of high food yields, a mechanized agriculture has brought production costs down to a low level, a flat topography has aided in the introduction of cost-saving farm machinery and the low cost of transporting farm products to consuming centers, and the use of power on farms, by displacing animal power, has added millions of acres to the farm land available for the production of food.

The unusual and excellent endowment of industrial, mineral, and agricultural resources offers opportunities for production and employment that are probably unmatched elsewhere.

ACKNOWLEDGMENTS

This report is made possible through the cooperation of the Bureau of Mines of the United States Department of the Interior, the Illinois State Department of Mines and Minerals, and the cooperation of mineral producers throughout Illinois in furnishing information regarding their operation.

Special acknowledgment is hereby made of the excellent contribution made by Miss Ethel M. King, Research Assistant, through the very efficient and systematic way in which she has maintained the statistical records throughout the year, facilitating the work of writing this report.

Each of the sections of this report was prepared in close collaboration with the heads of the several mineral research divisions of the Illinois State Geological Survey. Special assistance and advice were contributed by Ralph E. Grim, Petrographer and Principal Geologist in Charge of the Geological Resources Section; G. H. Cady, Senior Geologist and Head of the Coal Division; A. H. Bell, Geologist and Head of the Oil and Gas Division; J. E. Lamar, Geologist and Head, and Robert M. Grogan, Associate Geologist, both of the Industrial Minerals Division; F. H. Reed, Chief Chemist and Head, and G. C. Finger, Chemist and Head of the Fluorspar Division, both of the Geochemistry section.

SUMMARY OF PRODUCTION AND VALUE OF ILLINOIS MINERALS IN 1945

The mineral industry of Illinois in 1945 continued at a high rate of production. The total value of minerals produced and sold during the year amounted to $334,855,000, as valued at the mine, quarry, pit, or plant. This was a decrease of $9,526,000 or less than 3 percent from the high production of 1944.

The additional value of $193,046,000 for mineral materials processed, but mostly not mined, in Illinois brought the total value of all minerals produced and processed during 1945, for which data are available, to $527,901,000. This was a decrease of approximately $32,000,000 or 6 percent from the all-time high record established in 1943.

A summary of the production and value of Illinois minerals in 1945 is presented in table 1, with comparative data for 1943 and 1944. Detailed figures for each mineral are given in the various sections of this report, to which reference is made in table 1.

The unit of quantity measurement used for each mineral product is that commonly used in the commercial handling of that material. Wherever possible the net or short ton of 2,000 pounds is used, but some products are sold by the gallon, barrel, cubic foot, or by the number of pieces. In some materials, diversity of products makes it impossible to give any measure of quantity.

The value of each mineral product, in its first marketable form, is given as its net selling price at point of origin, without including any transportation expense other than that necessary in bringing it from the mine to the place where it is made into a marketable product. Wherever possible, average or unit rates of value are given. The quantity and value of metals are given, not as those of the ores, but in terms of the recovered metals.

Mineral production is considered as those minerals or mineral materials which are mined and sold or used by producers in Illinois. Mineral materials which were processed, but mostly not mined, in Illinois are shown separately. Every effort has been made to avoid duplication.

Illinois has attained a position of importance among the various states in the production of several mineral materials. Its rank both in quantity and value of these materials is given in table 1. Mineral products provided approximately 50 percent of the tonnage handled by Illinois railroads.

In order to permit comparison of recent mineral production with that in previous years, figure 1 and table 2 are presented, which show the value of the annual mineral production of Illinois from 1914 to 1945, inclusive.

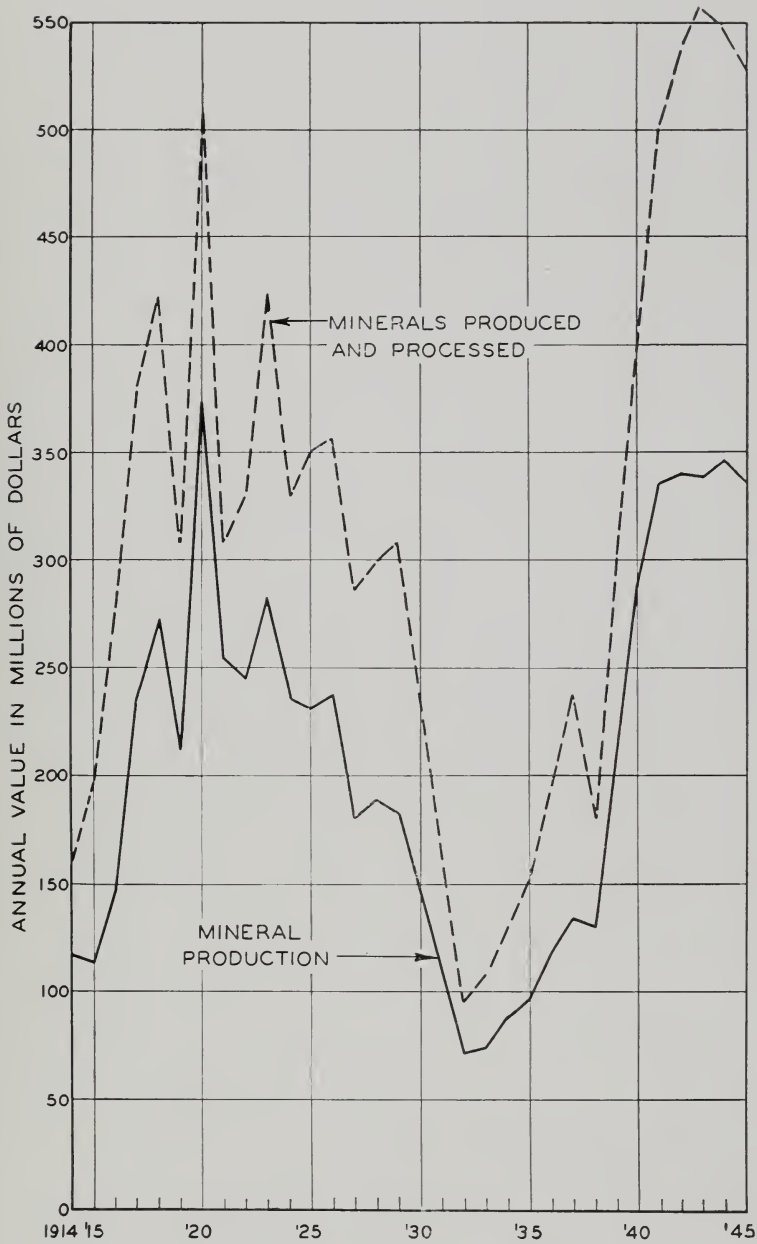


FIG. 1.—Value of annual mineral production in Illinois, 1914–1945.

TABLE 1.—SUMMARY OF MINERAL PRODUCTION OF

Line No.	Material	Detail table	Unit	1943*				
				Quantity	Value at plants		Rank among states	
					Total	Av.	Amt.	Value
1	*Coal—bituminous*	26, 28	Tons	73,344,800	$156,224,000	$2.13	3	4
	Petroleum—							
2	Crude oil	42	Bbls.	82,260,000	112,700,000	1.37	6	6
3	Natural gas—marketed	"	M cu.ft.	18,120,000	884,000	.049	14	15
4	Natural gas—used in fields	"	M cu.ft.	14,424,000	661,000	.046		
5	Natural gasoline	"	Gals.	71,737,000	4,072,000	.057	6	5
6	Liquefied petroleum gases	"	"	113,750,000	3,358,000	.029	2	3
7				—	121,675,000	—		
	Stone, rock products—							
8	Limestone, dolomite, marl	51, 52	Tons	11,429,102	10,654,148	.93	4	3
9	Cement	58	Bbls.	4,504,442	6,965,607	1.55	[d]16	[d]17
10	Lime	59	Tons	314,735	2,386,540	7.58	6	5
11	Mineral wool	—	—	—	2,426,339	—		
12	Ganister, sandstone	60	Tons	1,045	6,557	6.27		
13				—	22,439,191	—		
	Clays, clay products—							
14	Clays (except fuller's earth)	61	Tons	182,620	463,986	2.54	9	14
15	Fuller's earth	"	"	39,500	372,024	9.42	3	4
16	Clay products—refractories	62	"	260,362	5,379,492	20.66		
17	Structural	"	Eqv. tons	830,100	4,515,300	5.44		3
18	Whiteware and pottery	"	—	—	7,359,559	—		
19				—	18,090,361	—		
	Sand and Gravel—							
20	Silica sand	63	Tons	3,613,744	5,000,482	1.38	1	1
21	Other sand	64	"	3,552,391	1,763,612	.50		
22	Gravel	"	"	6,789,760	3,348,897	.49		
23			"	13,955,895	10,112,991	.72	2	3
	Silica and Tripoli—							
24	Ground silica	65	Tons	173,854	1,218,769	7.01	1	1
25	Tripoli ("amorphous" silica)	66	"	10,203	168,758	16.54	1	1
26			"	184,057	1,387,527	7.54	1	1
27	*Fluorspar*	80	Tons	198,789	6,292,789	31.66	1	1
	Metals—							
28	Zinc	82	Tons	5,851	1,263,816	216.00	17	17
29	Lead	"	"	2,043	306,450	150.00	15	15
30	Silver	"	Troy ozs.	2,153	1,531	.711	22	22
31				—	1,571,797	—		
32	*Miscellaneous minerals*	83	Tons	28,199	117,895	4.18		
33	*Annual mineral production*			—	$337,911,551	—		5
	Minerals processed, but mostly not mined, in Illinois[e]							
34	Coke and byproducts	39, 84	—	—	43,016,827	—	6	5
35	Packaged fuel	37, 84	Tons	3,081	38,445	12.48	6	6
36	Pig iron	84	"	5,920,894	126,910,295	21.43	4	4
37	Sulfuric acid	"	"	259,302	2,481,520	9.60	2	2
38	Slab zinc (out-of-state ore)	"	"	215,829	46,619,084	216.00	[f]2	[f]2
39	Miscellaneous minerals processed	"	"	35,855	2,872,624	80.12		
40	*Total minerals processed*			—	221,938,795	—		
41	*Total minerals produced and processed*			—	$559,850,346	—		

* Revised figures.
[a] Compiled from various sources, as stated in each detailed table. See footnotes for each table.
[b] Subject to revision.
[c] Not available.

ILLINOIS, SOLD OR USED BY PRODUCERS, 1943–1945[a]

1944*					1945							
Quantity	Value at plants		Rank among states		Quantity	Value at plants		Percent change in amount from 1944	Percent change in value from 1944	Rank among states		Line No.
	Total	Av.	Amt.	Val.		Total	Av.			Amt.	Val.	
77,400,000	$172,602,000	$ 2.23	3	4	73,446,900	$163,786,600	[b]$2.23	− 5.1	− 5.1	3	4	1
77,413,000	107,500,000	1.39	6	6	75,210,000	104,541,900	[b]1.39	− 2.8	− 2.8	6	6	2
20,000,000	1,000,000	.05	14	15	[b]19,000,000	[b]950,000	[b].05	− 5.0	− 5.0	14	15	3
13,600,000	680,000	.05			[b]13,000,000	[b]650,000	[b].05	− 4.4	− 4.4			4
61,351,000	3,870,000	.063	6	5	55,233,000	3,330,000	.06	−10.0	−14.0	6	5	5
133,018,000	4,130,000	.031	3	3	120,683,000	3,980,000	.033	− 9.3	− 3.6	3	3	6
—	117,180,000	—			—	[b]113,451,900	—	—	− 3.2			7
10,668,128	10,689,477	1.00	4	3	10,915,936	11,136,480	1.02	+ 2.3	+ 4.1	4	3	8
3,597,074	5,592,703	1.55	[d]13	[d]14	4,509,932	7,654,876	1.70	+25.4	+36.9	[e]	[e]	9
290,988	2,266,539	7.78	6	5	287,607	2,228,909	7.75	− 1.2	− 1.7	6	5	10
—	1,707,020	—			[e]	[e]	—	—	—			11
548	4,774	8.71			8,573	10,791	1.26	—	+126.0			12
—	20,260,513	—			—	21,031,056	—	—	+ 3.8			13
188,604	500,113	2.65	8	14	169,429	510,979	3.02	− 10.7	+ 2.2	8	14	14
42,277	390,346	9.23	3	4	43,664	403,085	9.23	+ 3.3	+ 3.3	3	4	15
200,021	4,053,387	20.26			227,755	4,170,977	18.31	+ 13.9	+ 2.9			16
737,587	4,258,517	5.77		3	1,123,775	7,486,053	6.66	+ 52.4	+ 75.8		[e]	17
—	6,764,620	—			—	6,920,883	—	—	+ 2.3			18
—	15,966,983	—			—	19,491,977	—	—	+ 22.1			19
3,331,185	4,642,979	1.39	1	1	2,576,460	3,723,731	1.45	− 22.7	− 19.8	1	1	20
2,956,570	1,450,369	.49			3,306,383	1,708,718	.49	+ 11.8	+ 17.8			21
6,057,765	2,968,300	.49			6,093,060	2,975,805	.49	+ 0.6	+ 0.3			22
12,345,520	9,061,648	.73	2	2	11,975,903	8,408,254	.70	− 11.9	− 7.2	2	2	23
156,353	1,076,785	6.88	1	1	140,376	935,389	6.66	− 10.3	− 13.1	1	1	24
12,031	205,732	17.02	1	1	11,144	184,189	16.53	− 7.4	− 10.5	1	1	25
168,384	1,282,517	7.62	1	1	151,520	1,119,578	7.45	− 10.0	− 12.7	1	1	26
176,259	5,954,991	33.79	1	1	147,251	5,014,807	34.06	− 16.5	− 15.8	1	1	27
7,262	1,655,736	228.00	18	18	8,235	1,894,050	230.00	+ 13.4	+ 14.4	18	18	28
1,971	315,360	160.00	14	14	3,327	572,244	172.00	+ 68.8	+ 81.5	[e]	[e]	29
2,437	1,733	.711	21	21	1,748	1,243	.711	− 28.3	− 28.3	[e]	[e]	30
—	1,972,829	—			—	2,467,537	—	—	+ 25.1			31
21,250	99,262	4.67			17,023	83,814	4.92	− 19.9	− 15.6			32
—	$344,380,743	—		5	—	[b]$334,855,523	—	—	− 2.7		5	33
—	47,330,798	—	6	5	—	44,642,444	—	—	− 5.7	6	6	34
1,837	23,037	12.54	5	5	16,690	186,593	11.20	+808.0	+710.0	[e]	[e]	35
5,686,397	118,953,078	20.92	4	4	5,061,368	116,303,897	22.98	− 11.0	− 2.2	4	4	36
234,245	2,328,395	10.0	2	2	216,482	2,186,468	10.10	− 7.6	− 6.1	2	2	37
148,100	33,766,764	228.00	[f]3	[f]3	116,669	26,833,850	230.00	− 21.2	− 20.5	[f]3	[f]3	38
35,201	2,724,091	77.39			38,387	2,892,652	75.35	+ 9.1	+ 6.2			39
—	205,126,163	—			—	193,045,904	—	—	− 5.9			40
—	$549,506,906	—			—	$527,901,427	—	—	− 3.9			41

[d] Rank among districts—U. S. Bur. of Mines.
[e] Other processed minerals produced in Illinois include pig lead, expanded vermiculite, alumina, phosphates, etc., but data for them are not available.
[f] Rank among states for total slab zinc smelted.

TABLE 2.—VALUE OF ILLINOIS MINERAL PRODUCTION
SUMMARY OF ANNUAL VALUES, 1914–1945[a]
(In thousands of dollars)

Year	Mineral production of Illinois (thousands)	Minerals processed, but mostly not mined, in Illinois (thousands)	Total minerals produced and processed (thousands)
1914	$117,166	$ 44,843	$162,009
15	114,446	82,871	197,317
16	146,360	130,082	276,442
17	234,736	144,754	379,490
18	271,244	149,740	420,984
19	213,701	95,077	308,778
1920	373,926	137,228	511,154
21	254,019	54,136	308,155
22	244,618	85,820	330,438
23	282,761	142,131	424,892
24	235,796	95,506	331,302
1925	231,658	118,702	350,360
26	237,242	119,642	356,884
27	180,394	105,099	285,493
28	188,099	110,622	298,721
29	182,791	125,516	308,307
1930	148,311	89,303	237,614
31	108,066	52,014	160,080
32	71,693	24,385	96,078
33	74,837	34,786	109,623
34	89,212	41,405	130,617
1935	96,484	57,038	153,522
36	117,916	78,693	196,609
37	133,437	104,359	237,796
38	130,155	50,482	180,637
39	215,157	86,324	301,481
1940	287,327	114,814	402,141
41	333,225	168,338	501,563
42	341,835	199,281	541,116
43	*337,912	*221,939	*559,851
44	*344,381	*205,126	*549,507
1945	334,855	193,046	527,901

* Revised figures.
[a] Compiled from following sources:
For years 1914-1922, Incl.—U. S. Geological Survey, Mineral Resources of United States.
1923-1931, " —U. S. Bur. Mines, Mineral Resources of United States.
1932-1938, " —U. S. Bur. Mines, Minerals Yearbooks.
1939-1945, " —Joint canvasses made by Illinois Geological Survey and U. S. Bureau of Mines, and from Minerals Yearbooks.

TABLE 3.—NATIONAL BITUMINOUS COAL OUTPUT SINCE 1938[a]

Year	Tonnage output in thousands	Percent increase by years	Year	Tonnage output in thousands	Percent increase by years
1938	348,545		1942	582,693	+13.3
1939	394,855	+13.3	1943	590,177	+ 1.3
1940	460,772	+16.7	1944	620,000	+ 5.0
1941	514,149	+11.6	1945	576,000	− 7.0

[a] Compiled from U. S. Bur. Mines, Minerals Yearbooks, 1939-1944. U. S. Bur. Mines Weekly Coal Report No. W.C.R. 1494, March 9, 1946. Does not include mines with annual production of less than 1,000 tons each.

COAL

Coal in 1945—The National Picture

The production of bituminous coal in 1945—an estimated output of 576,000,000 tons—declined 7 percent from the previous all-time high of 619,576,240 tons in 1944. Shortage of coal continued after the cessation of hostilities, and Government controls were retained. Labor difficulties caused several interruptions to production. According to the Bureau of Labor statistics, there were 598 strikes in coal mines.

There was practically no seasonal decline in production in 1945, due largely to the Government program urging consumers to accumulate stocks during the summer.

Figures for bituminous coal production since 1938 are shown in table 3.

Production by Districts

Coal production by districts is shown in table 4 for three years. Of particular interest are districts east of the Mississippi River which produce more than 90 percent of bituminous coal output.

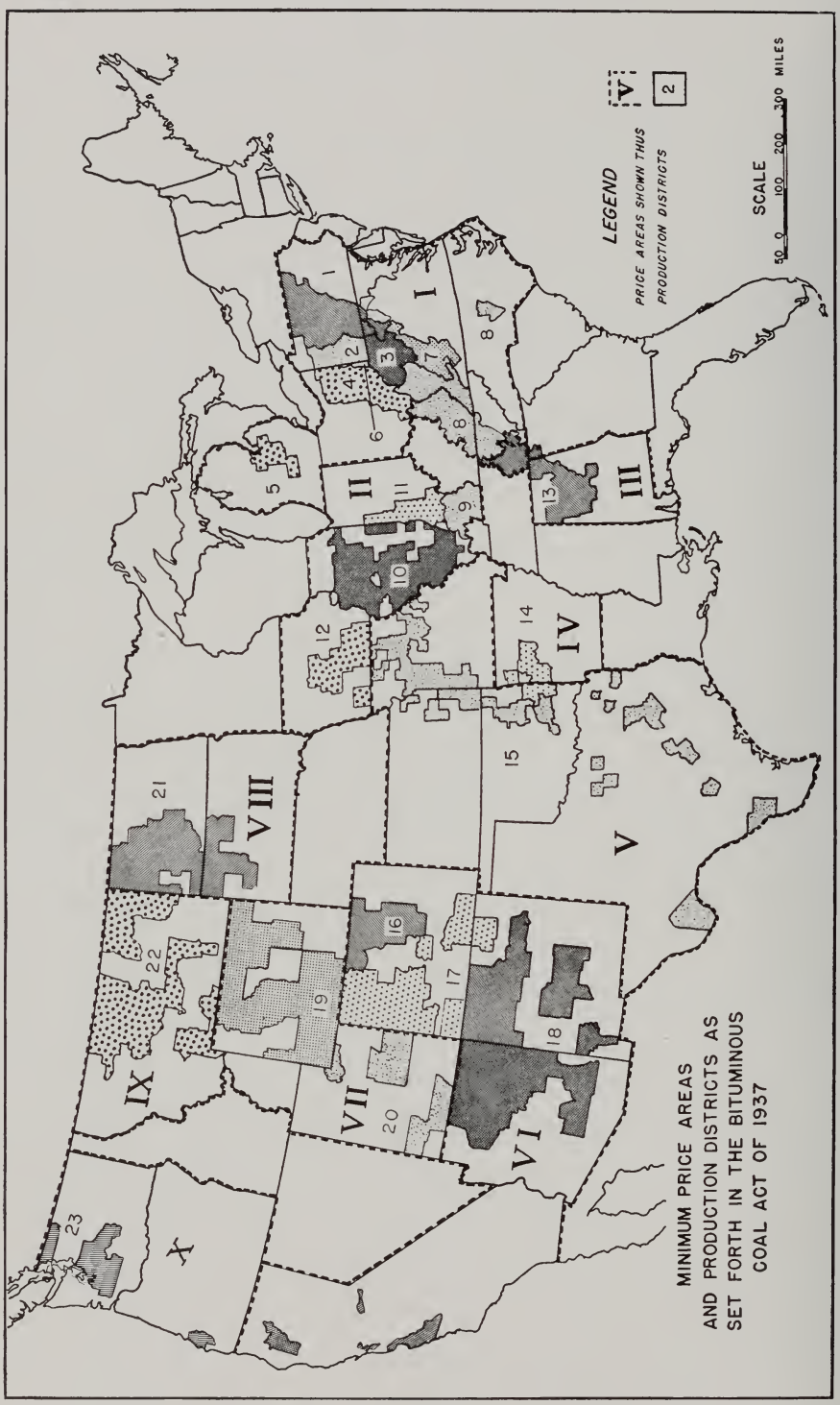
Although competition among producing districts in price areas is keen, there is a certain degree of market specialization among the several districts, based mainly on the characteristics of the product.

Districts 2, 7, and 8 (fig. 2) supply coking coal for the blast furnaces and also a high percentage of fuel used for domestic heating. These two markets are, in a sense, complementary. Coal suitable for coking is also excellent for domestic fuel. The

Table 4.—Bituminous Coal and Lignite, Production by Districts, 1943–1945
(In thousands of tons)

	1943[a]		1944[b]		1945[c]	
	Amount	Percent of total	Amount	Percent of total	Amount	Percent of total
Price Area 1						
Dist. 1. Eastern Pennsylvania	59,245	10.04	61,224	9.88	56,055	9.73
Dist. 2. Western Pennsylvania	84,643	14.34	87,560	14.13	78,150	13.57
Dist. 3. Northern West Virginia	41,393	7.01	47,206	7.62	44,850	7.78
Dist. 4. Ohio	32,255	5.46	33,877	5.47	32,715	5.68
Dist. 5. Michigan	169	0.03	140	0.02	125	0.02
Dist. 6. Panhandle	5,383	0.92	5,419	0.87	4,720	0.82
Dist. 7. Southern Numbered 1	63,058	10.68	61,932	10.00	56,618	9.83
Dist. 8. Southern Numbered 2	122,015	20.67	126,403	20.40	116,412	20.21
Total—Price Area 1	408,162	69.15	423,761	68.39	389,645	67.64
Price Area 2						
Dist. 9. West Kentucky	15,169	2.57	19,465	3.14	19,840	3.44
Dist. 10. Illinois	72,631	12.30	76,792	12.39	72,525	12.59
Dist. 11. Indiana	25,065	4.25	27,962	4.51	25,500	4.43
Dist. 12. Iowa	2,771	0.47	2,141	0.35	2,010	0.35
Total—Price Area 2	115,636	19.59	126,360	20.39	119,875	20.81
Price Area 3						
Dist. 13. Southeastern	18,725	3.18	20,329	3.29	20,319	3.53
Total—All Eastern Districts	542,523		570,450		529,839	
Percent of U. S. Total		91.92		92.07		91.98
Total—U. S.	590,177		619,576		576,000	

[a] Revised from Chapter "Bituminous Coal and Lignite" (preprint), U. S. Bur. Mines Yearbook, 1944, with final statistics for 1943.
[b] Revised from U. S. Bur. Mines, Mineral Market Report, M. M. S. No. 1359, Nov. 19,1945.
[c] Figures for 1945 are preliminary, as published in U. S. Bur. Mines Weekly Coal Report, No. W. C. R. 1494, March 9, 1946. Mines with annual production less than 1,000 tons are not included.


MINIMUM PRICE AREAS
AND PRODUCTION DISTRICTS AS
SET FORTH IN THE BITUMINOUS
COAL ACT OF 1937
LEGEND
PRICE AREAS SHOWN THUS V
PRODUCTION DISTRICTS 2
SCALE
50 0 100 200 300 MILES
I
II
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IX
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FIG. 2.

TABLE 5.—BITUMINOUS COAL AND LIGNITE PRODUCTION AND AVERAGE OUTPUT PER MAN BY METHODS OF MINING AND LOADING IN THE UNITED STATES, BY DISTRICTS, IN 1944*
(Districts as defined in the Bituminous Coal Act of 1937 and modifications thereto)

District	Strip mines		UNDERGROUND MINES								Grand total all mines	
			Using Mechanical Loading Devices				With 100% of output hand loaded		Total			
			With 90% or more of output mechanically loaded		With less than 90% of output mechanically loaded							
	Production net tons	Average tons per man per day	Production net tons	Average tons per man per day	Production net tons	Average tons per man per day	Production net tons	Average tons per man per day	Production net tons	Average tons per man per day	Production net tons	Average tons per man per day
1. Eastern Pennsylvania	10,520,892	11.18	10,981,220	5.57	20,425,689	4.40	19,296,485	3.83	50,703,394	4.35	61,224,286	4.86
2. Western Pennsylvania	12,143,347	17.03	22,634,047	5.95	24,328,475	4.82	28,454,665	4.57	75,417,187	5.00	87,560,534	5.54
3. Northern West Virginia	9,830,106	16.12	19,612,791	7.35	10,481,197	5.74	7,281,893	4.94	37,375,881	6.26	47,205,987	7.17
4. Ohio	11,663,139	15.35	14,033,459	6.10	2,343,569	4.55	5,836,888	4.08	22,213,916	5.23	33,877,055	6.77
5. Michigan	—	—	—	—	[a]	[a]	40,783	2.39	139,938	2.81	139,938	2.81
6. Panhandle	1,194,618	19.54	1,362,389	6.09	2,240,368	4.59	621,670	4.44	4,224,427	4.96	5,419,045	5.94
7. Southern Numbered 1	1,616,784	12.32	8,694,688	5.26	27,016,043	4.62	24,604,123	4.03	60,314,854	4.43	61,931,638	4.51
8. Southern Numbered 2	676,509	9.96	30,501,224	6.41	52,164,786	4.69	43,060,091	4.41	125,726,101	4.90	126,402,610	4.91
9. West Kentucky	5,040,787	21.62	9,612,371	8.27	501,309	5.95	4,310,994	4.68	14,424,674	6.65	19,465,461	8.11
10. Illinois	17,979,872	20.26	50,242,604	8.76	2,018,919	5.45	6,550,054	4.64	58,811,577	7.83	76,791,449	9.14
11. Indiana	14,126,145	17.14	12,490,635	8.33	[a]	[a]	1,222,317	4.47	13,835,738	7.66	27,961,883	10.63
12. Iowa	511,710	8.03	[a]	[a]	[a]	[a]	1,259,540	3.04	1,629,226	3.29	2,140,936	3.83
13. Southeastern	1,227,467	8.12	5,010,287	2.86	9,891,192	3.10	4,200,548	2.68	19,102,027	2.93	20,329,494	3.05
14. Arkansas-Oklahoma	655,638	8.72	1,016,723	2.50	[a]	[a]	801,365	3.00	1,891,821	2.70	2,547,459	3.28
15. Southwestern[b]	8,868,087	13.46	811,740	3.75	—	—	1,262,669	2.14	2,074,409	2.57	10,942,496	7.46
16. Northern Colorado	14,508	12.09	1,084,612	5.24	1,204,771	5.63	175,542	4.90	2,464,925	5.39	2,479,433	5.41
17. Southern Colorado	1,172	7.81	2,043,504	5.28	2,996,026	4.03	1,779,384	3.70	6,818,914	4.23	6,820,086	4.23
18. New Mexico	—	—	—	—	—	—	617,949	2.43	617,949	2.43	617,949	2.43
19. Wyoming	571,895	15.80	8,827,201	6.59	[a]	[a]	136,681	3.34	8,968,117	6.49	9,540,012	6.73
20. Utah	—	—	6,159,755	6.50	[a]	[a]	367,039	5.13	7,119,261	6.23	7,119,261	6.23
21. N.-S. Dakota (lignite)	1,681,889	17.48	[a]	[a]	[a]	[a]	15,058	1.09	711,030	8.43	2,392,919	13.26
22. Montana[b]	2,513,385	73.52	2,144,307	7.67	[a]	[a]	72,595	3.44	2,278,955	7.27	4,792,340	13.79
23. Washington and Alaska	60,426	10.73	686,449	3.17	313,520	2.98	813,574	3.31	1,813,543	3.20	1,873,969	3.27
Undistributed	—	—	395,424	8.28	1,624,663	4.84	—	—	—	—	—	—
Total	100,898,376	15.89	208,345,430	6.60	157,550,527	4.56	152,781,907	4.15	518,677,864	5.04	619,576,240	5.67

* U. S. Bur. Mines, Weekly Coal Report, No. W. C. R. 1503 Supplement, May 11, 1946.
[a] Included under "Undistributed." [b] For purposes of concealment of individual operators' figures, Montana lignite (District 22) with production of 51,709 tons has been included with District 15.

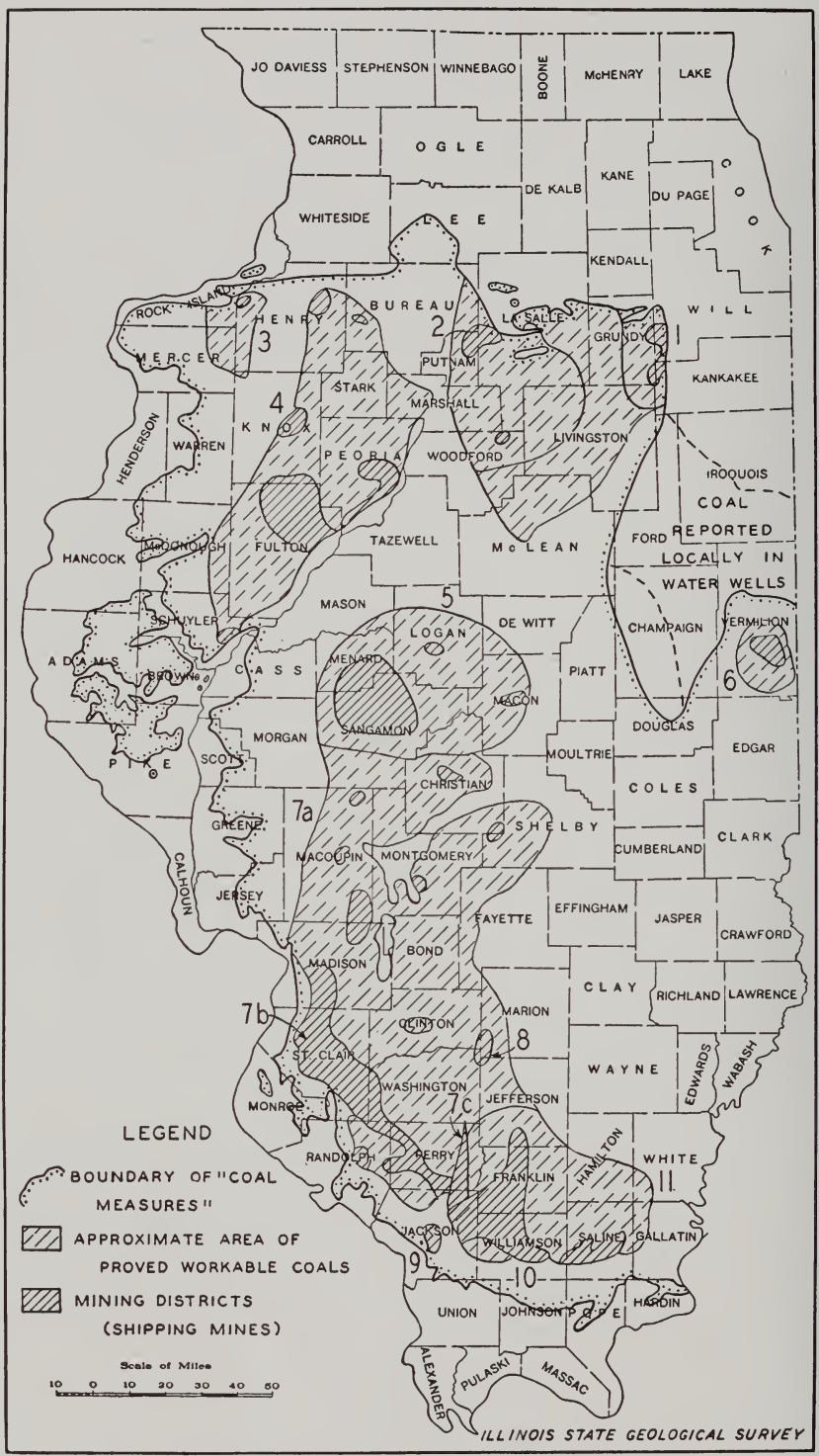

FIG. 3.—Map of Illinois showing location of principal coal mining districts and coal beds mined. Names of districts and coal beds mined are listed on p. 19.

PRINCIPAL COAL MINING DISTRICTS AND THE PRINCIPAL COAL BEDS MINED
(See Fig. 3)

Map. No.	Mining District	Coal Beds Mined
1	Wilmington } Longwall	LaSalle (No. 2)
2	LaSalle, or Third Vein } Longwall	LaSalle (No. 2)
3	Rock Island-Mercer (abandoned)	Rock Island (No. 1)
4	Fulton-Peoria	Herrin (No. 6)
	Fulton-Peoria	Springfield (No. 5)
5	Springfield	Springfield (No. 5)
6	Danville	Danville (No. 7)
	Danville	Grape Creek
7	Southwestern Illinois	
	a) Standard	Herrin (No. 6)
	b) Belleville	Herrin (No. 6)
	c) DuQuoin	Herrin (No. 6)
8	Centralia	Herrin (No. 6)
9	Murphysboro or Big Muddy (abandoned)	Murphysboro
10	Franklin-Williamson	Herrin (No. 6)
	Franklin-Williamson	Harrisburg (No. 5)
11	Saline County	Herrin (No. 6)
	Saline County	Harrisburg (No. 5)

small sizes and screenings are therefore absorbed by the coking coal market, and the prepared sizes find a ready outlet for domestic fuel over a large area.

Districts 3, 4, 6, and 9 (fig. 2) market one-third or more of their output as railroad fuel, whereas the remaining districts distribute their output among manufacturing industries, utilities, railroads, and retail yards.

Shipments from principal competitive fields into the Illinois coal market area are shown in table 6.

CUMULATIVE COAL PRODUCTION

Table 8 shows cumulative coal production, by counties, for the period 1882-1945, as compiled from the Annual Coal Reports of the Department of Mines and Minerals with an estimate of total production in the state for the period 1833-1881. Sixty-eight counties have a recorded production during this period. Eleven of these counties produced more than 100 million tons, the highest recorded production being from Franklin County with a total of 385,323,-218 tons. The eleven leading counties, in order of output are given in table 9.

TABLE 6.—PRODUCTION IN DISTRICTS WITH LARGE ALL-RAIL SHIPMENTS TO THE UPPER MISSISSIPPI VALLEY, 1941–1945[a]
(In thousands of tons)

	Districts 7 and 8 West Virginia, Kentucky, Virginia		Districts 9, 10, 11 Illinois, Indiana, Western Kentucky		Illinois	
	Amount	Index	Amount	Index	Amount	Index
1941	169,148	100	88,934	100	54,703	100
1942	184,279	109	102,460	116	63,750	117
1943	183,711	109	113,015	127	72,430	133
1944	186,583	110	123,450	139	76,960	139
1945	173,030	102	117,865	124	72,525	126

[a] Compiled from U. S. Bur. Mines Weekly Coal Reports. Does not include mines with annual production less than 1,000 tons each.

TABLE 7.—BITUMINOUS COAL PRODUCTION IN THE UNITED STATES, BY STATES, 1940–1945[a,b]
(In thousands of tons)

	1940	1941	1942	1943	1944	1945
Alabama	15,324	15,464	19,301	17,160	18,995	18,737
Alaska	174	239	261	289	352	300
Arkansas and Oklahoma	3,100	3,345	4,372	4,556	4,710	4,600
Colorado	6,589	6,949	8,086	8,324	8,110	7,668
Georgia and North Carolina	42	40	31	14	21	32
Illinois[a]	51,872	55,366	65,746	73,345	77,400	73,447
Indiana	18,869	22,484	25,388	25,065	28,140	25,500
Iowa	3,231	2,939	2,948	2,771	2,690	2,010
Kansas and Missouri	6,676	7,153	7,750	7,747	8,140	6,995
Kentucky:						
Eastern	40,346	42,130	48,800	48,042	49,887	48,035
Western	8,795	11,580	13,431	15,169	18,350	19,840
Maryland	1,503	1,701	2,001	1,933	1,960	1,765
Michigan	410	311	231	169	160	125
Montana	2,867	3,254	3,829	4,833	4,880	4,550
New Mexico	1,111	1,251	1,669	1,851	1,795	1,500
North and South Dakota	2,284	2,380	2,591	2,500	2,520	2,523
Ohio	22,772	29,319	32,764	32,255	33,940	32,715
Pennsylvania (bituminous)	116,603	130,240	144,073	141,050	148,800	131,650
Tennessee	6,008	7,045	8,158	7,179	7,400	6,600
Texas	621	353	304	153	130	108
Utah	3,576	4,077	5,517	6,666	7,120	6,644
Virginia	15,348	18,441	20,136	20,280	19,900	18,105
Washington	1,650	1,841	1,953	1,528	1,515	1,376
West Virginia:						
Southern	{126,438	{140,250	{155,882	{158,804	111,080	101,840
Northern					52,765	50,360
Wyoming	5,808	6,646	8,133	9,155	9,665	9,890
Other States[c]	17	15	13	53	15	7
Total	462,034	514,813	583,368	590,891	620,440	576,922

[a] Compiled from the following sources:
For Illinois—Illinois Department of Mines and Minerals, Annual Coal Reports.
For all other states—1940-1944, inclusive. U. S. Bur. Mines, Minerals Yearbooks, 1944, and Weekly Coal Report, No. W.C.R. 1494, March 9, 1946.
Figures for Illinois include production of all mines. Those for other states exclude mines having annual production of less than 1,000 tons each. Production of small mines in Illinois is included in "Total" in this table.
[b] Includes lignite.
[c] The states reporting are not identical from year to year.

COAL IN THE EASTERN INTERIOR BASIN

Table 10 shows coal production in the Eastern Interior coal basin for the years 1939-1945 inclusive. The production history of these three competitive districts in Illinois, Indiana, and western Kentucky and the contribution of each to the total production of the Eastern Interior basin from 1913 to 1942 is shown in table 4 of Report of Investigations No. 94, page 17.

Although the war ended during 1945, Illinois coal output continued at high levels and increased its percentage of contribution to the Mississippi Valley market area.

COAL DISTRIBUTION IN THE UPPER MISSISSIPPI VALLEY

UPPER MISSISSIPPI VALLEY MARKET AREA

The Upper Mississippi Valley coal market area comprises the states of Illinois, Indiana, Wisconsin, Minnesota, Iowa, Missouri, and the eastern Dakotas and Kansas. In this area is marketed coal from the East-

TABLE 8.—TOTAL PRODUCTION OF COAL BY COUNTIES FROM 1882 TO 1945, INCLUSIVE[a]

County	Production	County	Production
Adams	46,186	Menard	13,111,923
Bond	7,355,569	Mercer	14,992,480
Brown	55,367	Monroe	8,284
Bureau	47,267,386	Montgomery	73,632,128
Calhoun	96,247	Morgan	177,223
Cass	212,477	Moultrie	2,032,236
Christian	150,180,318	Peoria	61,021,205
Clinton	36,328,501	Perry	122,074,424
Coles	198,932	Pike	5,081
Crawford	44,786	Pope	1,562
Edgar	785,648	Putnam	10,071,893
Effingham	796	Randolph	50,911,475
Franklin	385,323,218	Richland	154
Fulton	121,537,659	Rock Island	3,844,052
Gallatin	3,756,319	St. Clair	193,112,237
Greene	620,719	Saline	155,680,162
Grundy	39,337,772	Sangamon	221,852,822
Hamilton	22,407	Schuyler	2,336,276
Hancock	372,410	Scott	612,476
Hardin	40	Shelby	4,118,804
Henry	16,485,086	Stark	1,226,214
Jackson	70,049,692	Tazewell	17,142,077
Jasper	23,739	Vermilion	142,409,679
Jefferson	4,151,967	Wabash	186,144
Jersey	118,624	Warren	666,630
Johnson	242,109	Washington	16,260,430
Kankakee	1,948,786	White	1,676,741
Knox	15,882,816	Will	29,041,473
La Salle	64,846,878	Williamson	254,491,819
Livingston	10,052,042	Woodford	7,740,232
Logan	13,829,369		
Macon	10,977,160	Total (1882–1945)	2,837,587,848
Macoupin	233,965,910	Estimated Production (1833–1881)	73,386,123
McDonough	2,632,090		
McLean	5,544,139	Total Production (1833–1945)	2,910,973,971
Madison	143,050,677		
Marion	37,294,035		
Marshall	12,511,946		

[a] Illinois State Dept. of Mines and Minerals in conjunction with Illinois State Geological Survey.

ern Interior coal field in the states of Illinois, Indiana, and western Kentucky, and coal from the Appalachian districts of Pennsylvania, West Virginia, Virginia, eastern Kentucky, and Ohio. Coal is distributed by rail, rail-lake, rail-river, and truck. The coal requirements of the Upper Mississippi Valley include fuel for domestic heating, fuel for general industrial purposes, fuel for rail transportation, and coal for the manufacture of metallurgical coke. Competitive conditions among coals from the several producing districts in the Appalachian fields and in the Eastern Interior districts of Illinois, Indiana, and western Kentucky vary

TABLE 9.—COUNTIES OF MORE THAN 100 MILLION TONS OUTPUT FROM 1882 TO 1945, INCLUSIVE

Franklin	385,323,218
Williamson	254,491,819
Macoupin	233,965,910
Sangamon	221,852,822
St. Clair	193,112,237
Saline	155,680,162
Christian	150,180,318
Madison	143,050,677
Vermilion	142,409,679
Perry	122,074,424
Fulton	121,537,659
Total, 11 counties	2,123,678,925
Total, all counties of the state	2,837,587,848
Percent produced by 11 counties	74.8

TABLE 10.—PRODUCTION OF BITUMINOUS COAL IN THE EASTERN INTERIOR COAL FIELD, 1939–1945[a]
(In thousands of tons)

Year	Illinois		Indiana		West Kentucky		Total
	Amount	Percent[b]	Amount	Percent[b]	Amount	Percent[b]	
1939	46,783	65.0	16,943	23.5	8,291	11.5	72,017
1940	50,610	65.3	18,869	24.1	8,795	11.2	78,274
1941	54,703	61.5	22,484	25.3	11,747	13.2	88,934
1942	65,071	62.6	25,388	24.5	13,431	12.9	103,890
1943	72,631	64.3	25,065	22.2	15,169	13.5	112,865
1944	76,960	62.4	28,140	22.8	18,350	14.8	123,450
1945	72,525	61.6	25,500	21.6	19,840	16.8	117,865

[a] Compiled from U. S. Bur. of Mines Minerals Yearbooks, 1939-1943 and Weekly Coal Reports Nos. 1442, March 10, 1945, and 1494, March 9, 1946. Does not include mines with annual production of less than 1,000 tons each. Figures for years 1913-1938 are found in Report of Investigations No. 94, page 17, table 4, Ill. Geol. Survey.
[b] Percent of total in Eastern Interior coal field.

from the keenly competitive struggle in the industrial and railroad fuel markets to the less competitive conditions in the domestic fuel trade and the limited competition in the by-product coal demand.

The distribution of coal from ten coal producing districts into the markets of the Upper Mississippi Valley is accomplished by all-rail, rail-lake, rail-river, and truck haul.

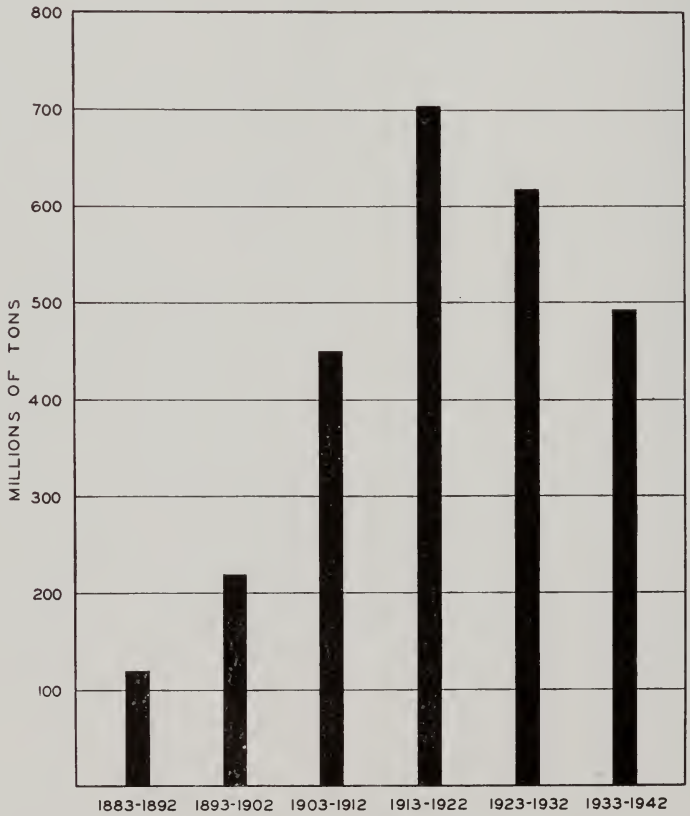

FIG. 4.—Illinois coal production by ten-year periods, 1883–1942.

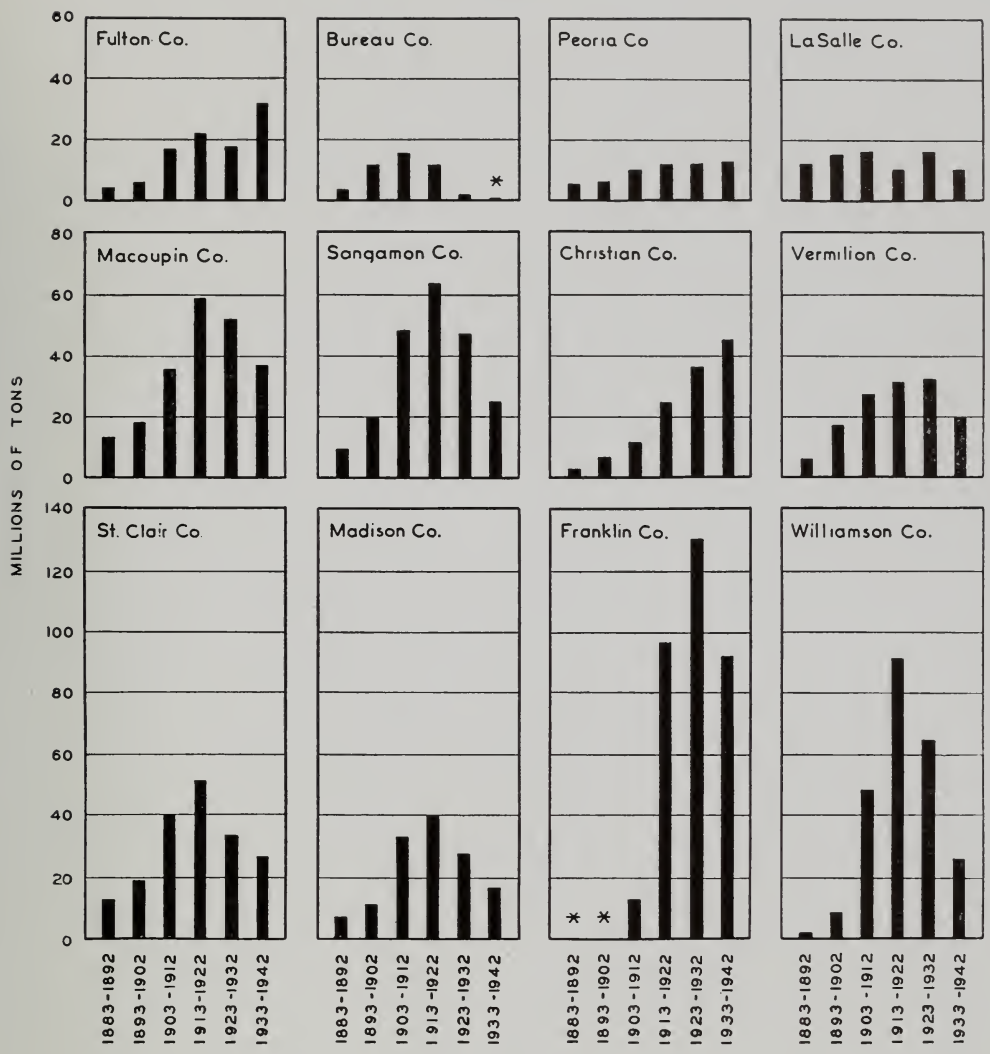

FIG. 5.—Production of Illinois coal in representative counties in northern, southern, central and Belleville districts, by ten-year periods, 1883–1942.

APPALACHIAN COAL MOVEMENT

Coal from Appalachian producing districts is shipped to the Upper Mississippi Valley by all-rail haul and by rail-lake haul via lower Lake Erie ports. The heaviest contributors to the Upper Mississippi market are the fields in West Virginia and eastern Kentucky. Virginia, although a small producing state, ships considerable quantities into the Upper Mississippi Valley market. Shipments of coal from Pennsylvania and Ohio by all-rail routes are only minor, and by rail-lake are less important than the shipments from the West Virginia and eastern Kentucky fields. Coal production in Pennsylvania, northern West Virginia, the Panhandle and Ohio is used, in the main, in the industrial districts of western Pennsylvania and eastern Ohio and do not enter greatly into the markets of the Upper Mississippi Valley.

Shipments of coal by rail-haul (exclusive of railroad fuel), the origin and destination of coal shipped on the lakes, receipts of lake

TABLE 11.—ORIGIN AND DESTINATION OF REVENUE RAILROAD SHIPMENTS OF COAL FROM
(Exclusive of non-
(In

Origin	Destination:	Chicago District	Illinois[b] (other)	Milwaukee	Wisconsin (other)	Council Bluffs[c]	Iowa (other)
			1944				
Western Pennsylvania		779	29,332	—	—	—	—
Central Pennsylvania, Somerset-Myersdale, Cumberland-Piedmont		19,089	7,419	149	10,149	30	13,153
Fairmont, West Virginia		44,391	10,303	1,834	3,187	—	2,411
Northern and Eastern Ohio		6,790	485	—	—	—	—
Southern Ohio		7,956	—	—	—	—	—
Kanawha, Logan, Kenova-Thacker		2,300,417	196,177	6,932	45,844	294	176,445
New River-Winding Gulf, Pocahontas-Tug River		7,687,840	431,662	154,355	559,747	215	68,335
Northeastern Kentucky		3,124,223	121,772	1,461	24,887	—	160,887
Virginia		299,815	42,168	261	59,456	—	13,766
Hazard, Harlan, Southern Appalachians		2,677,139	420,785	103	52,087	154	539,583
Ex-river coal		13,276	—	—	—	—	—
Northern Illinois		760,017	5,087,769	—	123,751	98	1,722,852
Central and Southern Illinois		7,498,802	14,605,898	140,221	1,876,113	112,079	2,498,736
Indiana		3,027,145	1,475,604	274,953	821,620	31,182	577,047
Western Kentucky		1,046,862	428,312	1,122	164,597	4,917	261,474
Grand Total		28,514,541	22,848,686	581,391	3,741,438	148,969	6,034,689
			1945				
Western Pennsylvania		48,908	20,686	—	—	—	—
Central Pennsylvania, Somerset-Myersdale, Cumberland-Piedmont		15,541	4,475	101	7,184	300	9,796
Fairmont, West Virginia		40,251	5,054	468	3,790	—	1,145
Northern and Eastern Ohio		1,625	418	—	—	—	—
Southern Ohio		5,805	—	—	—	—	—
Kanawha, Logan, Kenova-Thacker		1,463,138	144,017	11,467	26,708	155	98,876
New River-Winding Gulf, Pocahontas-Tug River		5,710,337	353,586	105,055	447,545	—	50,344
Northeastern Kentucky and McRoberts		2,358,981	69,647	2,387	21,393	—	97,594
Virginia		253,195	29,083	684	45,322	49	8,168
Hazard, Harlan, Southern Appalachian		1,614,198	244,883	102	31,933	51	283,941
Ex-river coal		3,390	—	—	—	—	—
Northern Illinois		457,548	4,277,451	5,383	107,949	302	1,579,903
Central and Southern Illinois		6,124,829	12,719,808	136,786	1,527,914	58,019	2,513,872
Indiana		2,735,638	1,295,978	209,022	708,300	208	578,714
Western Kentucky		1,080,865	451,600	7,632	184,721	6,288	278,792
Grand Total		21,914,249	19,616,686	479,087	3,112,759	65,372	5,501,145

[a] Data from U. S. Bureau of Mines, Monthly Coal Distribution Reports, 1944 and 1945.
[b] Includes Davenport, Iowa, for shipments from Ohio and the Crescent, and includes Davenport, Bettendorf, and Iowanna Iowa, for shipments from Illinois, Indiana, and western Kentucky, excluding East St. Louis, Ill.
[c] Includes Omaha and South Omaha, Nebraska.

Illinois, Indiana, Western Kentucky, and the Appalachian Fields in 1944 and 1945[a]
revenue railroad fuel)
tons)

St. Louis[d]	Kansas City[e]	St. Joseph[f]	Missouri (other)	Kansas	Nebraska	Minnesota	South Dakota	North Dakota	Total	Percent of total
				1944						
—	—	—	—	—	—	—	—	—	30,111	—
50,305	660	195	1,306	1,164	1,468	6,805	652	—	112,544	.2
758	54	—	—	—	—	443	—	—	63,381	.1
—	—	—	—	—	—	—	—	—	7,275	—
—	—	—	—	—	—	—	—	—	7,956	—
312,888	—	94	232	—	406	16,393	399	—	3,056,521	4.2
616,372	34	—	—	123	112	84,472	5,260	—	9,608,527	13.3
2,027	—	—	—	51	659	16,067	1,550	—	3,453,584	4.8
126,966	—	—	53	—	—	7,193	700	—	550,378	.8
23,029	—	—	665	—	1,643	25,746	1,178	—	3,742,112	5.1
—	—	—	—	—	—	—	—	—	13,276	—
—	248	—	1,054	—	20,622	26,877	11,713	—	7,746,001	10.7
5,243,887	288,140	38,494	2,275,844	89,808	241,437	577,183	108,934	573	35,596,149	49.1
13,977	2,566	—	838	500	6,639	134,873	6,272	—	6,373,216	8.8
37,474	—	—	56,251	—	2,774	43,327	15,629	1,536	2,064,275	2.9
6,427,683	291,702	38,783	2,336,243	91,646	275,760	939,379	152,287	2,109	72,425,306	100.0
				1945						
36	—	—	—	—	—	—	—	—	69,630	.1
35,329	803	274	947	971	987	6,284	556	—	83,548	.1
853	—	—	—	—	—	157	—	—	51,718	.1
127	—	—	—	—	—	—	—	—	2,270	—
—	—	—	—	—	—	—	—	—	5,805	—
281,166	—	—	97	109	339	6,827	344	—	2,034,053	3.4
469,518	—	—	302	52	115	73,950	4,470	—	7,215,274	12.2
828	—	—	—	—	336	11,825	1,335	—	2,564,326	4.3
96,615	—	—	—	—	—	5,520	507	—	439,143	.7
15,007	—	—	769	—	564	13,176	461	—	2,205,085	3.7
—	—	—	—	—	—	—	—	—	3,390	—
—	—	53	747	—	239	20,375	13,023	—	6,462,973	10.8
4,551,281	126,699	24,956	2,008,513	142,281	160,215	619,921	101,073	327	30,816,494	51.5
10,975	5,633	—	8,963	—	6,259	137,448	3,023	55	5,700,216	9.5
35,989	—	—	46,680	—	5,752	74,285	9,372	1,737	2,183,713	3.6
5,497,724	133,135	25,283	2,067,018	143,413	174,806	969,768	134,164	2,119	59,836,728	100.0

[d] Includes East St. Louis, Illinois.
[e] Includes Kansas City, Kansas.
[f] Includes Atchison and Leavenworth, Kansas.

TABLE 12.—ORIGIN OF LAKE CARGO COAL FROM APPALACHIAN FIELDS, 1942–1945
(In thousands of tons)

From	1942[a]	1943[b]	1944[b]	1945[c]
Ohio	4,171	4,682	4,995	4,322
Pennsylvania	9,305	8,409	10,568	9,601
Moundsville, West Virginia	358	406	395	357
Fairmont, Cumberland, Piedmont	2,420	2,357	3,283	3,288
Southern West Virginia—low volatile	9,160	14,256	10,797	10,021
Southern West Virginia—high volatile	14,746	8,653	13,902	12,281
Eastern Kentucky, Tennessee, Virginia	9,295	8,692	11,551	11,438
Total	49,455	47,455	55,491	51,308

[a] U. S. Bur. Mines Monthly Coal Distribution Report No. 147, June 13, 1944.
[b] U. S. Bur. Mines Monthly Coal Distribution Report No. 159, April 16, 1945.
[c] U. S. Bur. Mines Monthly Coal Distribution Report No. 171, April 1, 1946.

TABLE 13.—LAKE CARGO SHIPMENTS AND RECEIPTS OF COAL AT UPPER LAKE DOCKS, 1934–1945[a]
(In thousands of tons)

Year	Bituminous coal loaded into vessels at Lake Erie ports	Receipts at		Total receipts
		Lake Superior ports	Lake Michigan ports[b]	
1934	34,869	8,023	4,535	12,558
1935	34,730	6,829	4,043	10,872
1936	44,011	9,358	5,114	14,472
1937	43,645	9,115	4,822	13,937
1938	34,173	6,614	3,758	10,372
1939	39,837	6,515	4,229	10,744
1940	46,548	6,991	4,436	11,427
1941	49,733	8,356	4,830	13,186
1942	47,815	8,108	5,068	13,176
1943	46,059	9,455	4,982	14,437
1944	53,981	9,417	5,277	14,694
1945	49,901	8,316	5,242	13,558

[a] U. S. Bur. Mines, Monthly Coal Distribution Reports.
[b] Ports on Lake Michigan north of Waukegan.

cargo coal, and shipments of coal from Illinois and western Kentucky to Chicago for lake shipments are shown in tables 11 to 14.

Shipments of coal from Illinois and western Kentucky fields over Lake Michigan through the port of Chicago declined sharply in 1945 as compared with the previous year. This indicates a resumption of competition from Appalachian fields.

PATTERN OF COAL DISTRIBUTION AND CONSUMPTION IN THE UPPER MISSISSIPPI VALLEY

Coal consumption in the states of the Upper Mississippi Valley for the year ending June 30, 1945, was approximately 182 million tons. This is allocated to the several major markets, as shown in summary table 15.

Some railroad fuel from Appalachian fields is, no doubt, also used in this area but there is no way of determining the quantity.

The Upper Mississippi Valley draws its fuel requirements from widely distributed coal producing districts in the northern Appalachians, the southern Appalachians, and the interior coal fields in Illinois, Indiana, western Kentucky and Iowa. Two factors play an important role in forming the pattern of coal distribution in this large

TABLE 14.—LAKE SHIPMENTS OF COAL FROM THE EASTERN INTERIOR BASIN, 1945[a, b]

Month	West Kentucky	Illinois	Total
January	—	—	—
February	—	—	—
March	—	6,552	6,552
April	88,365	—	88,365
May	95,452	23,991	119,443
June	135,292	20,439	155,731
July	141,056	15,097	156,153
August	28,653	11,873	40,526
September	26,950	17,510	44,460
October	8,358	28,562	36,920
November	—	9,638	9,638
December	—	—	—
Total	524,126	133,662	657,788

[a] U. S. Bur. Mines Monthly Coal Distribution Reports Nos. 161-172 inclusive. 1945.
[b] No shipments from Indiana.

TABLE 15.—SUMMARY OF ASCERTAINABLE USES OF ALL COALS IN THE UPPER MISSISSIPPI VALLEY FOR THE YEAR ENDING JUNE 30, 1945

	Tons
Coal used as industrial fuel	64,327,124
Coal shipped to retail yards	51,367,862
Coal used for by-product ovens	21,768,563
Coal produced in Illinois,[a] Indiana, and Iowa, and used for railroad fuel.	33,280,945
Coal shipped in trucks	9,276,333
Coal used at the mine	1,323,223
Coal used by private railways	633,254
Smithing coal	44,729
Miscellaneous	268,487
Total	182,290,520

[a] It is impossible to allocate railroad fuel consumption by states. The above figure represents the amount of railroad fuel produced in Illinois, Indiana, and Iowa, which is presumed to be used by railroads in the Upper Mississippi Valley.

TABLE 16.—SUMMARY OF SHIPMENTS OF BITUMINOUS COAL INTO THE UPPER MISSISSIPPI VALLEY, JULY 1, 1944 TO JUNE 30, 1945[a]
(In tons)

Producing area and district	Mode of haul	Uses					
		Industrial fuel	Percent	Retail yards	Percent	By-product	Percent
Northern Appalachian	All-rail	1,436,545		1,286,720		78,701	
(Producing districts 1, 2, 3, 4, and 6—See Fig. 6)	Lake	2,938,176		10,808		1,235,068	
Total		4,374,729	6.8	1,297,528	2.5	1,313,769	6.0
Southern Appalachian	All-rail	7,127,151		19,910,769		9,731,868	
(Producing districts 7 and 8)	Lake	5,058,695		385,123		9,773,444	
Total		12,185,846	19.1	20,295,892	39.5	19,505,312	89 8
Eastern Interior	All-rail	39,807,224		17,888,177		372,692	
(Producing districts 9, 10, and 11)	Lake	28,107		3,042			
Total		39,835,331	62.0	17,891,219	34.7		1.6
Alabama and West of Mississippi River (Producing districts, 12, 13, 14, 15)	All-rail	3,654,505	5.7	4,743,732	9.2	2,887	2.6
Total	All-rail	52,025,545		43,829,398		10,186,148	
Source unknown	Lake	4,276,881	6.4	7,139,482	14.1	573,903	2.6
Grand Total		64,327,124		51,367,862		21,768,563	
Illinois shipments		27,876,715	73.4	13,320,480	30.4	307,742	

[a] Source: Bituminous Coal Distribution, Year Ended June 30, 1945, U. S. Bur. Mines, M.M.S. No. 1388. March, 1946.

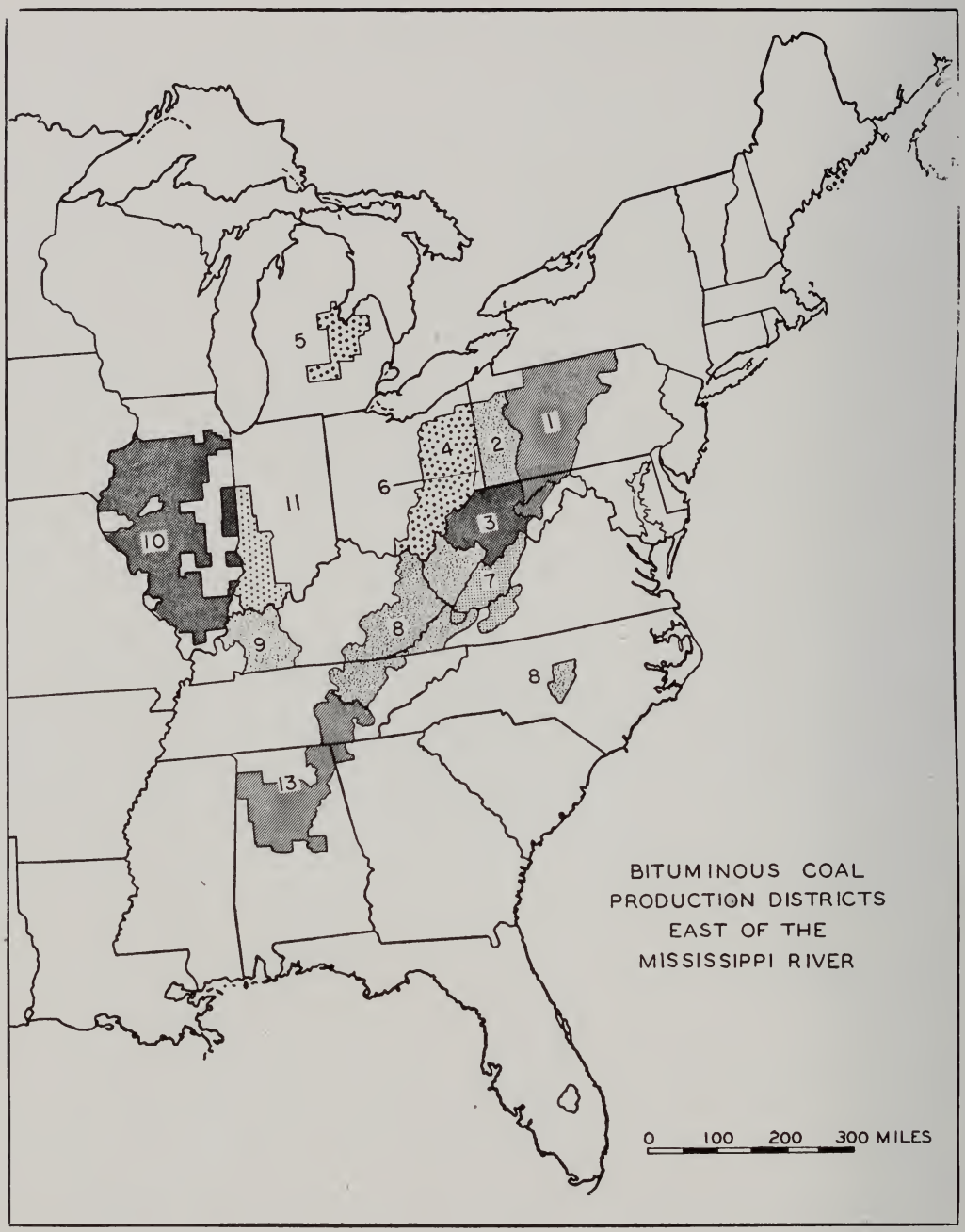

FIG. 6.

market area—the rail-lake transportation system and facilities, and secondly, the large requirements for coking coal.

COAL CONSUMPTION BY MAJOR USES AND SOURCES

The origin and major uses (exclusive of railway fuel) of coal in the Upper Mississippi Valley, delivered by all-rail haul and by rail-lake is shown in table 16. This table shows the tonnages of coal shipped from each group of producing districts and the market in which the coal was used, together with the percentages supplied by all-rail haul for each of the uses. The tonnages received by lake haul could not be differen-

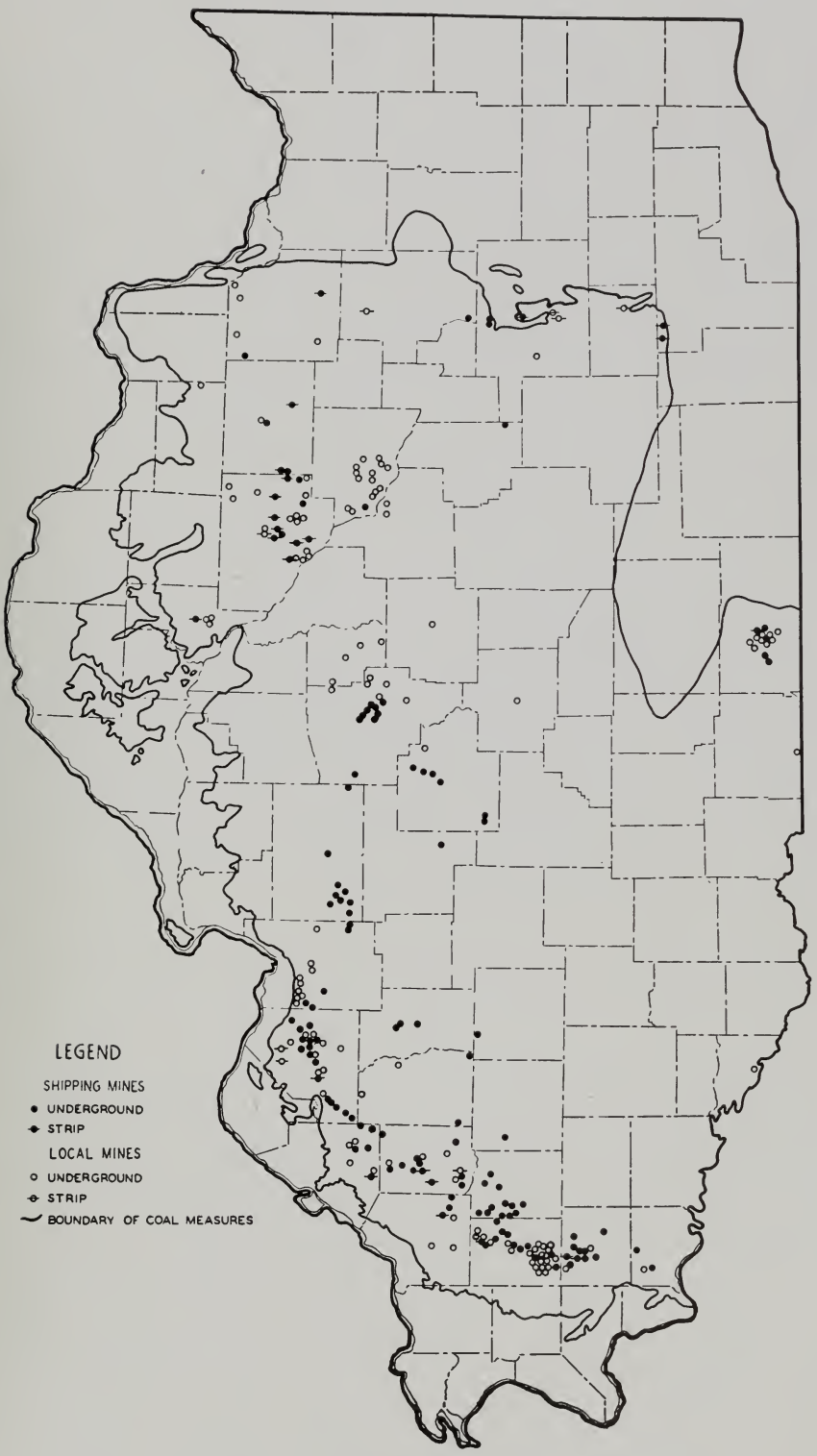

FIG. 7.—Map of Illinois showing location of shipping coal mines, and local mines having annual production of 5,000 tons or more.

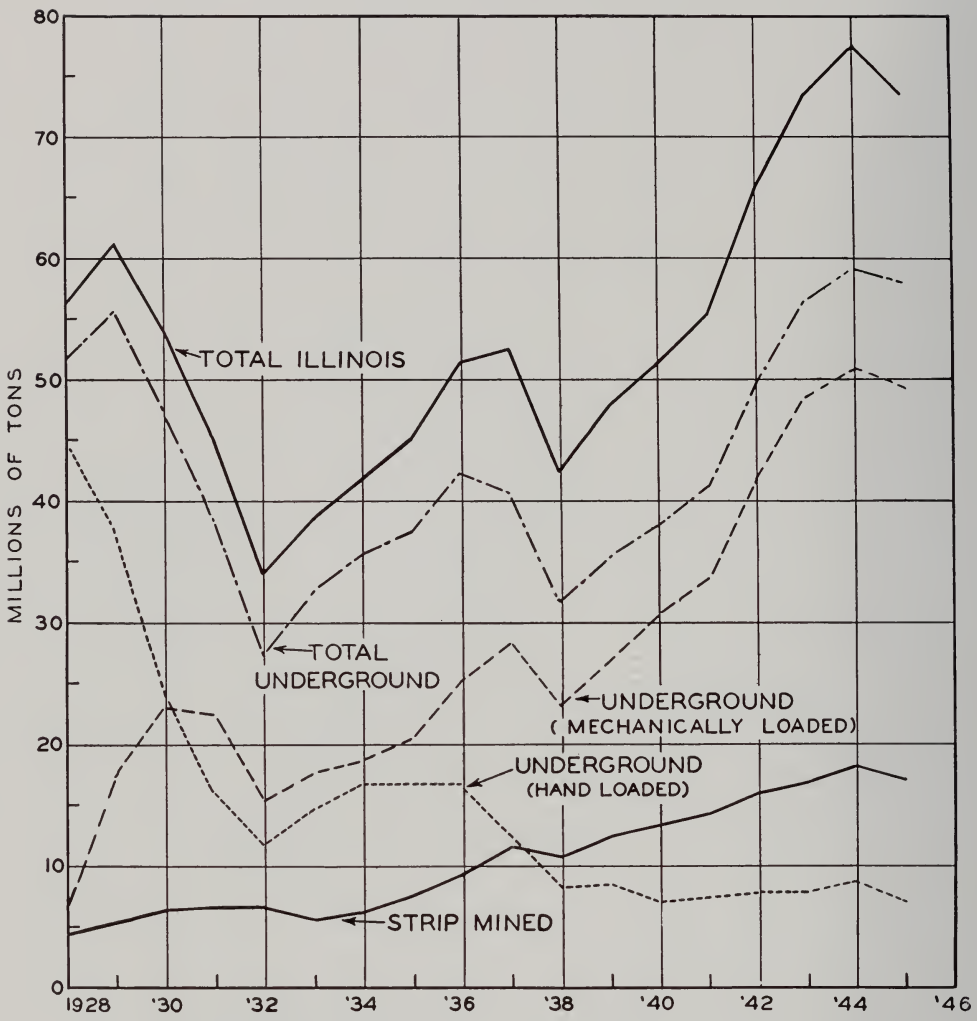

FIG. 8.—Annual production of Illinois coal, classified by mining methods, 1928–1945.

tiated as to districts of origin. This table (No. 16) discloses the small percentage of fuel supplied to the Upper Mississippi Valley by producing districts 1, 2, 4, and 6, that is the northern Appalachian fields (fig. 6).

Industrial fuel demands are supplied most heavily by the coal producing districts 9, 10, 11 (see fig. 6), of which District 10, Illinois, alone supplies 43 percent.

In coal supplied to retail yards, in which is included coal for small commercial and industrial establishments as well as coal for domestic heating, the northern Appalachian fields made an even smaller contribution than for industrial fuel. On the other hand, the southern Appalachian districts supplied nearly 40 percent of the coal sold to retail yards. This large shipment must be interpreted in connection with the predominant position of these districts in the by-product coal market of the steel centers of Illinois and Indiana. The prepared sizes of coal sold to the retail trade and the run-of-mine and screenings sold to the coking industry are joint products of the same operation. The production of one brings about the production of the other. Hence, it is advantageous to develop markets for the prepared sizes that are, in a sense, by-products of the

coking coal output. These markets are found in the domestic fuel requirements of the Chicago district, in eastern Wisconsin, and in Minnesota. It should be noted that shipments over the lakes from southern Appalachian districts are mainly for industrial and by-product fuel and not for domestic fuel. Two factors enter into this distribution pattern. The rail-lake haul results in severe degradation and loss of merchantable coal of domestic grade. This degradation is not of such significance in coal used for industrial purposes as in the by-product oven. The second factor forming all-rail haul for the domestic sizes of coal is the ultimate destination of fuel for domestic use. In the case of the Chicago market, the coal is destined, not to the lake front as in the group of heavy fuel-using industries in the southern part of the Chicago industrial district, but to the outlying residential districts southwest, west and northwest of Chicago. A rail-lake haul would involve unloading at Chicago ports and an additional rail haul. These several transfers and separate coal hauls from mine to consumers bin, together with the severe degradation entailed, would erase any possible economies achieved by water transportation on this particular grade of fuel. This, however, is not the case for markets as far north as eastern Wisconsin cities and the market supplied out of Duluth.

The by-product fuel used in the Upper Mississippi Valley comes almost exclusively from the southern Appalachian districts. Although production of this class of fuel in the northern fields amounted to 48 million tons during this period compared with 39 million tons in the southern fields, the output of the northern fields is absorbed almost entirely by the coke ovens in Pennsylvania and eastern Ohio, and do not enter the lake states market to a great extent.

The disposal of Illinois coal for the manufacture of metallurgical coke is small but marks the beginning of a market which is expected to expand.

Table 17 shows coal produced in three coal producing states in the Upper Mississippi Valley, of which the destination is not known. The geography of production is such that it is reasonable to assume that most of it is used by consumers in the Upper Mississippi Valley. The most significant item upon which there is some doubt is the movement into and out of the territory of coal used for railroad fuel. To a smaller degree this may also be said of coal distributed by truck.

TABLE 17.—COAL PRODUCED AND SHIPPED FROM MINES IN ILLINOIS, INDIANA, AND IOWA, FOR SPECIFIC MARKETS, FOR YEAR ENDING JUNE 30, 1945[a]
(In tons)

Market	From			
	Illinois	Indiana	Iowa	Total
Railroad fuel, U. S. and Canada	23,806,512	9,256,143	218,290	33,280,945
Truck	5,822,535	1,855,104	697,190	8,374,829
Estimated truck production not reported	336,940	231,253	333,311	901,504
Destination and use unknown	202,335	100,619	10,262	313,216
Private railways	127,738	505,516	—	633,254
Used at the mine	1,148,075	156,863	18,285	1,323,223
Total	31,444,135	12,105,498	1,277,338	44,826,971

[a]Source: Bituminous Coal Distribution, Year Ended June 30, 1945, U. S. Bur. Mines, M.M.S., No. 1388, March, 1946.

TABLE 18.—SOURCES OF COAL SHIPPED TO THREE IMPORTANT CONSUMER GROUPS IN THE UPPER MISSISSIPPI VALLEY, FOR YEAR ENDING JUNE 30, 1945
(Net tons)

	Producing District					
	1	2	3	4	5	7
Consuming area						
Industrial						
Illinois	2,324	10,282	11,233	233	—	65,985
Indiana	654	4,517	17,301	26,245	—	91,962
Michigan	51,040	268,398	133,514	879,186	12,026	115,322
Wisconsin	104	—	10,084	3,026	—	5,860
Iowa	—	—	46	—	—	392
Minnesota	—	—	—	—	—	41
Missouri	5,240	—	1,092	—	—	1,282
Nebraska	—	—	—	—	—	99
North Dakota	—	—	—	—	—	—
South Dakota	—	—	—	—	—	—
Total	59,362	283,197	173,270	908,690	12,026	280,943
Retail yards						
Illinois	11,148	95	38,691	7,752	—	3,707,350
Indiana	1,939	536	34,023	46,984	—	979,843
Michigan	10,239	17,413	117,068	383,257	29,744	3,531,686
Wisconsin	—	—	11,382	454	—	664,824
Iowa	—	—	12,640	2,605	—	55,569
Minnesota	—	—	2,102	463	—	81,306
Missouri	18,028	—	—	—	—	319,772
Nebraska	—	—	—	—	—	380
North Dakota	—	—	—	—	—	—
South Dakota	—	—	—	157	—	5,534
Total	41,354	18,044	215,906	441,672	29,744	9,346,264
By-product coal						
Illinois	—	—	—	—	—	1,394,633
Indiana	—	454	—	—	—	2,451,149
Michigan	—	60,925	1,059	13,828	—	149,945
Wisconsin	—	—	2,435	—	—	—
Iowa	—	—	—	—	—	2,559
Minnesota	—	—	—	—	—	—
Missouri	—	—	—	—	—	125,843
Nebraska	—	—	—	—	—	—
North Dakota	—	—	—	—	—	—
South Dakota	—	—	—	—	—	—
Total	—	61,379	3,494	13,828	—	4,124,129

Tables 18 and 19 give the shipments of coal, in detail, from individual producing districts to states in the Illinois coal market area, for three principal groups of consumers. In table 19, shipment of coal over the lakes, the source of coal is given wherever obtainable. The source of the coal was not reported for about 12 million tons of coal shipped from Upper Lake docks to inland markets.

TABLE 18.—CONTINUED

	Producing District					
	8	9	10	11	12	13
Consuming area						
Industrial						
Illinois	350,809	181,659	19,268,372	2,259,029	—	—
Indiana	1,513,405	506,381	1,687,700	7,331,641	—	—
Michigan	4,943,859	7,139	177,309	62,095	—	—
Wisconsin	15,078	127,275	1,782,366	900,604	—	—
Iowa	2,400	46,061	1,987,157	290,283	565,918	—
Minnesota	1,469	24,297	870,631	109,926	—	—
Missouri	19,188	66,221	1,951,582	3,332	—	438
Nebraska	—	413	60,304	—	—	—
North Dakota	—	3,390	—	—	—	—
South Dakota	—	7,507	91,294	3,256	—	—
Total	6,846,208	970,343	27,876,715	10,960,166	565,918	438
Retail yards						
Illinois	1,837,321	632,128	7,334,764	1,284,010	—	—
Indiana	3,896,563	260,714	222,409	1,530,584	—	—
Michigan	3,974,131	33,681	205,615	44,186	—	—
Wisconsin	125,155	22,472	517,907	63,373	—	—
Iowa	586,977	257,093	2,422,206	349,640	141,805	—
Minnesota	41,114	31,912	312,766	23,639	228	—
Missouri	100,781	15,004	2,085,402	5,090	9,549	1,769
Nebraska	1,437	7,778	171,279	1,542	159	—
North Dakota	—	170	425	—	—	—
South Dakota	1,026	3,975	47,707	706	—	—
Total	10,564,505	1,264,927	13,320,480	3,302,770	151,741	1,769
By-product coal						
Illinois	1,711,409	—	297,566	45,375	—	—
Indiana	3,333,584	—	—	—	—	—
Michigan	251,438	—	—	—	—	—
Wisconsin	32,202	—	—	19,575	—	—
Iowa	42,629	—	9,685	—	2,887	—
Minnesota	—	—	—	—	—	—
Missouri	235,212	—	491	—	—	—
Nebraska	—	—	—	—	—	—
North Dakota	—	—	—	—	—	—
South Dakota	1,265	—	—	—	—	—
Total	5,607,739	—	307,742	64,950	2,887	—

TABLE 18.—CONCLUDED

	Producing District					
	14	15	16–23	Total	Via Lakes	Grand Total
Consuming area						
Industrial						
Illinois	773	515	—	22,151,214	74,302	22,225,516
Indiana	—	—	—	11,179,806	—	11,179,896
Michigan	—	—	—	6,649,888	7,398,391	14,048,279
Wisconsin	—	—	—	2,844,397	3,561,512	6,405,909
Iowa	19,941	65,278	577	2,978,053	865	2,978,918
Minnesota	1,993	11,279	47,057	1,066,693	1,228,745	2,295,438
Missouri	46,027	1,326,450	—	3,420,852	—	3,420,852
Nebraska	2,672	494,072	158,846	716,406	—	716,406
North Dakota	—	—	713,339	716,729	28,794	745,523
South Dakota	922	11,842	186,566	301,387	9,250	310,637
Total	72,328	1,909,436	1,106,385	52,025,425	12,301,859	64,327,284
Retail yards						
Illinois	191	—	—	14,853,450	78,169	14,931,619
Indiana	—	—	—	6,973,595	—	6,973,595
Michigan	—	—	—	8,347,020	1,161,391	9,508,411
Wisconsin	—	—	—	1,405,567	3,669,236	5,074,803
Iowa	98,648	206,213	27,243	4,160,639	115,638	4,276,277
Minnesota	52,650	414	56,281	602,875	2,068,825	2,671,700
Missouri	647,391	1,089,869	1,012	4,293,667	—	4,293,667
Nebraska	184,756	412,543	652,829	1.432,703	5,047	1,437,750
North Dakota	—	—	927,339	927,934	175,335	1,103,269
South Dakota	29,253	8,739	194,851	291,948	335,932	627,880
Total	1,012,889	1,717,778	1,859,555	43,289,398	7,609,573	50,898,971
By-product coal						
Illinois	—	—	—	3,448,983	2,063,551	5,512,534
Indiana	—	—	—	5,785,187	4,190,936	9,976,123
Michigan	—	—	—	477,195	3,392,981	3,870,176
Wisconsin	—	—	—	54,212	1,487,026	1,541,238
Iowa	—	—	—	57,760	—	57,760
Minnesota	—	—	—	—	447,921	447,921
Missouri	—	—	—	361,546	—	8,784
Nebraska	—	—	—	—	—	—
North Dakota	—	—	—	—	—	—
South Dakota	—	—	—	1,265	—	1,265
Total				10,186,148	11,582,415	21,415,801

[a] Source: Bituminous Coal Distribution, Year Ended June 30, 1945, U. S. Bur. Mines, M.M.S. No. 1388, March, 1946.

TABLE 19.—SHIPMENTS OF COAL TO PRINCIPAL TYPES OF CONSUMERS IN THE ILLINOIS COAL MARKET, VIA LAKE, FOR YEAR ENDING JUNE 30, 1945[a]

	Producing Districts					
	1	2	3	4	6	7
Receiving state						
Industrial fuel						
Illinois	—	—	—	—	—	—
Indiana	—	—	—	—	—	—
Michigan	260,976	1,358,964	176,797	182,622	—	590,191
Wisconsin	202,152	355,887	379,357	—	1,912	50,753
Iowa	—	—	—	—	—	—
Minnesota	—	19,509	—	—	—	—
Nebraska	—	—	—	—	—	—
North Dakota	—	—	—	—	—	—
South Dakota	—	—	—	—	—	—
Total	463,128	1,734,360	556,154	182,622	1,912	640,994
Retail yards						
Illinois	—	—	—	—	—	—
Indiana	—	—	—	—	—	—
Michigan	—	—	—	10,808	—	9,264
Wisconsin	—	—	—	—	—	14,927
Iowa	—	—	—	—	—	—
Minnesota	—	—	—	—	—	—
Nebraska	—	—	—	—	—	—
North Dakota	—	—	—	—	—	—
South Dakota	—	—	—	—	—	—
Total	—	—	—	10,808	—	24,191
By-product coal						
Illinois	—	412,745	2,472	—	—	562,270
Indiana	—	89,962	—	—	—	2,421,720
Michigan	—	464,429	228,873	—	—	797,217
Wisconsin	—	26,467	10,120	—	—	362,515
Minnesota	—	—	—	—	—	—
Total	—	993,603	241,465	—	—	4,143,722

[a] Source: Bituminous Coal Distribution, Year Ended June 30, 1945, U. S. Bur. Mines, M.M.S. 1388, March, 1946.

TABLE 19.—CONCLUDED

	Producing Districts				
	8	10	Total shipments to alongside consumers	Ex-dock shipments from commercial docks	Grand Total
Receiving state					
Industrial fuel					
Illinois	—	—	—	74,302	74,302
Indiana	—	—	—	—	—
Michigan	4,203,683	28,107	6,801,340	597,051	7,398,391
Wisconsin	205,891	—	1,195,952	2,365,650	3,561,512
Iowa	—	—	—	865	865
Minnesota	8,177	—	27,686	1,201,059	1,228,745
Nebraska	—	—	—	—	—
North Dakota	—	—	—	28,794	28,794
South Dakota	—	—	—	9,250	9,250
Total	4,417,751	28,107	8,024,978	4,276,881	12,301,859
Retail yards					
Illinois	7,060	—	7,060	—	7,060
Indiana	—	—	—	—	—
Michigan	324,668	3,042	347,782	813,609	1,161,391
Wisconsin	29,213	—	44,140	3,625,096	3,669,236
Iowa	—	—	—	115,638	115,638
Minnesota	—	—	—	2,068,625	2,068,825
Nebraska	—	—	—	5,047	5,047
North Dakota	—	—	—	175,335	175,335
South Dakota	—	—	—	335,932	335,932
Total	360,941	3,042	398,982	7,139,482	7,538,464
By-product coal					
Illinois	1,086,064	—	2,063,551	—	2,063,551
Indiana	1,679,254	—	4,190,936	—	4,190,936
Michigan	1,888,747	—	5,379,266	13,715	5,392,981
Wisconsin	975,657	—	1,374,759	112,267	1,487,026
Minnesota	—	—	—	447,921	447,921
Total	5,629,722	—	11,008,512	573,903	11,582,415

Source: Bituminous Coal Distribution, Year Ended June 30, 1945, U. S. Bur. Mines, M.M.S. No. 1388, March, 1946.

TABLE 20.—DISTRIBUTION OF BITUMINOUS COAL PRODUCED IN ILLINOIS, 1945[a]
(In tons)

Disposal	Amount	Disposal	Amount
All-rail, river, ex-river[b] (excluding railroad fuel)			
Total for United States	40,783,717	Unspecified	206
Middle Atlantic			
Pennsylvania	53	Canada	—
East North-Central			
Illinois	25,836,193	Railroad fuel	23,121,651
Indiana	2,025,048		
Michigan	422,485	Tidewater	594,296
Ohio	1,024		
Wisconsin	2,198,811	Lake	133,662
West North-Central			
Iowa	4,366,287	Distributors or wholesalers (destination and use unknown)	149,078
Kansas	68,915		
Minnesota	1,232,624		
Missouri	3,959,598	Truck	5,653,044
Nebraska	210,424		
North Dakota	439	Private railways, tramways, and conveyors	132,199
South Dakota	132,102		
South Atlantic			
Florida	6,871		
South Carolina	51	Coal used at mines	1,107,616
Virginia	357		
East South-Central			
Alabama	9,189	Net change in inventory	6,188
Kentucky	1,188		
Mississippi	32,816	Total	71,681,451
Tennessee	93,472	Percentage of estimated production	98.8
West South-Central			
Arkansas	165,044		
Louisiana	20,520		

[a] Data from U. S. Bur. Mines Monthly Coal Distribution Report, No. 172, May 1, 1946.
[b] Also includes byproduct and smithing coal shipped by all methods of transportation except by lake and tidewater.

ILLINOIS COAL INDUSTRY IN THE UPPER MISSISSIPPI VALLEY

In table 20 is given the distribution of coal produced in Illinois for the year ending June 30, 1945.

Table 21 shows the methods of shipment of coal produced in Illinois, by sizes and by principal markets including railroad fuel, industrial, retail dealers, byproduct and water gas, bunker and vessel fuel, and fuel exported.

TABLE 21.—SHIPMENT OF BITUMINOUS COAL IN DISTRICT 10, ILLINOIS, BY SIZES, DURING THE YEAR ENDING JUNE 30, 1945*
(In net tons of 2,000 pounds)

(Includes mines with an average daily capacity of 50 tons or more and all mines, washeries, and preparation plants with rail or river connections.)

	All-Rail, River and Ex-River[a]	Interport[b]		Truck[c]	Total
		Tidewater	Lake		
1. All Lump Coal and All Double Screened Coal with Top Size over 2″:					
Total	19,670,965	100,147	409,580	3,135,772	23,316,464
Railroad fuel	10,547,752	—	408,243	—	10,955,995
Industrial	1,470,003	—	1,337	—	1,471,340
Retail dealers	7,622,388	—	—	—	7,622,388
Byproduct and water gas[d]	560	—	—	—	560
Bunker and vessel fuel	—	416	—	—	416
Export[e]	—	99,731	—	—	99,731
Use not reported	30,262	—	—	3,135,772	3,166,034
2. All Double Screened Coal with Top Size not exceeding 2″:					
Total	3,037,250	8,958	36,748	803,435	3,886,391
Railroad fuel	447,330	—	32,455	—	479,785
Industrial	1,153,471	—	4,293	—	1,157,764
Retail dealers	1,254,557	—	—	—	1,254,557
Byproduct and water gas[d]	180,917	—	—	—	180,917
Bunker and vessel fuel	—	—	—	—	—
Export[e]	—	8,958	—	—	8,958
Use not reported	975	—	—	803,435	804,410
3. Mine-run Modified, Mine-run Domestic, Mine-run Screened and Altered, Mine-run and Minus Resultant with Top Size over 2″:					
Total	16,353,616	—	17,236	49,536	16,420,388
Railroad fuel	10,460,267	—	17,236	—	10,477,503
Industrial	5,681,807	—	—	—	5,681,807
Retail dealers	130,159	—	—	—	130,159
Byproduct and water gas[d]	—	—	—	—	—
Bunker and vessel fuel	—	—	—	—	—
Export[e]	—	—	—	—	—
Use not reported	81,383	—	—	49,536	130,919
4. All Minus Resultant and Deducted Screenings with Top Size over ¾″ and not exceeding 2″:					
Total	23,582,408	—	25,519	1,581,257	25,189,184
Railroad fuel	2,226,090	—	—	—	2,226,090
Industrial	17,141,763	—	22,477	—	17,164,240
Retail dealers	4,026,430	—	3,042	—	4,029,472
Byproduct and water gas[d]	116,818	—	—	—	116,818
Bunker and vessel fuel	—	—	—	—	—
Export[e]	—	—	—	—	—
Use not reported	71,307	—	—	1,581,257	1,652,564

TABLE 21 —(Concluded)

	All-Rail, River and Ex-River[a]	Interport[b]		Truck[c]	Total
		Tidewater	Lake		
5. All Minus Resultant and Deducted Screenings with Top Size not exceeding ¾":					
Total	3,409,460	—	139	175,673	3,585,272
Railroad fuel	75,726	—	139	—	75,865
Industrial	2,718,452	—	—	—	2,718,452
Retail dealers	596,874	—	—	—	596,874
Byproduct and water gas[d]	—	—	—	—	—
Bunker and vessel fuel	—	—	—	—	—
Export[e]	—	—	—	—	—
Use not reported	18,408	—	—	175,673	194,081
6. Total of 1 through 5:					
Total	66,053,699	109,105	489,222	5,745,673	72,397,699
Railroad fuel	23,757,165	—	458,073	—	24,215,238
Industrial	28,165,496	—	28,107	—	28,193,603
Retail dealers	13,630,408	—	3,042	—	13,633,450
Byproduct and water gas[d]	298,295	—	—	—	298,295
Bunker and vessel fuel	—	—	—	—	416
Export[e]	—	416	—	—	108,689
Use not reported	202,335	108,689	—	5,745,673	5,948,008
7. Size not Reported					
Total	118,648	11,702	—	76,862	207,212
Railroad fuel	49,347	—	—	—	49,347
Industrial	52,067	—	—	—	52,067
Retail dealers	7,787	—	—	—	7,787
Byproduct and water gas[d]	9,447	—	—	—	9,447
Bunker and vessel fuel	—	7,222	—	—	7,222
Export[e]	—	4,480	—	—	4,480
Use not reported	—	—	—	76,862	76,862
8. Other Disposals, Use and Size not Specified	.....	.....	.....	.....	759
9. Coal Used at Mine[f]	.....	.....	.....	.....	1,148,075
10. Net Change in Inventory	.....	.....	.....	.....	−29,557
11. Grand Total 6 through 10	.....	.....	.....	.....	73,724,188

[a] Includes shipments by truck to byproduct and beehive coke ovens away from the producing mine and for smithing in District 10—117,222 tons.
[b] Includes shipments via tidewater to alongside consumers and via Great Lakes to alongside consumers and for consignment to Canada.
[c] Truck data not reported by use.
[d] Includes shipments to beehive coke ovens.
[e] This item includes only such shipments to tidewater ports for cargoes destined to points outside the United States and Canada as were reported to the U. S. Bur. Mines. Tonnages shown here are not all inclusive.
[f] Includes coal used to produce coal, coal used by mine employees, and coal made into briquets or packaged fuel at reporting mines.
*Source: U. S. Bur. Mines, Mineral Market Report, M.M.S. No. 1388, March, 1946.

Recapitulation of Table 21

Method of movement and/or use:	Tonnage
Total all-rail movements—Industrial use	24,045,736
Total all-rail movements—Retail dealers	13,308,138
Total shipments of railroad fuel, other than shipments to tidewater	23,806,512
Total shipments of coal to byproduct and beehive coke plants, other than to tidewater and lake	307,742
Total river shipments, other than for railroad fuel, byproduct, or smithing use	4,367,469
Total ex-river shipments, other than for railroad fuel, byproduct or smithing use	6,677
Total shipments to tidewater	264,061
Total shipments to the Great Lakes	503,206
Total shipments to distributors and wholesalers where the final destination and use are not known	202,335
Shipments by truck or wagon, other than deliveries to byproduct plants and to coke ovens and for smithing use	5,822,535
Shipments via conveyor belt, other than deliveries to byproduct plants and to coke ovens and for smithing use	127,738
Total tonnage shipped	72,762,149
Coal used by mine employees	281,249
Coal used to produce coal	866,826
Other disposals not specified above	759
Total tons shipped or used	73,910,983
Net change in inventory	−29,557
Total production reported	73,881,426
Percent of estimated production	99.6

Table 22.—Distribution by State and Use, by All-Rail, River, and Ex-River Shipments (Excluding Railroad Fuel), of Illinois Bituminous Coal Produced During Year Ending June 30, 1945[a]

	Industrial	Retail Yards	Byproduct and Water Gas	Total
Illinois	19,268,372	7,334,764	297,566	26,900,702
Indiana	1,687,700	222,409	—	1,910,109
Michigan	177,309	205,615	—	382,924
Ohio	57	520	—	577
Wisconsin	1,782,366	517,907	—	2,300,273
Iowa	1,987,157	2,422,206	9,685	4,419,048
Kansas	13,191	62,107	—	75,298
Minnesota	870,631	312,766	—	1,183,397
Missouri	1,951,582	2,085,402	491	4,037,475
Nebraska	60,304	171,279	—	231,583
North Dakota	—	425	—	425
South Dakota	91,294	47,707	—	139,001
Florida	3,101	3,366	—	6,467
Alabama	—	710	—	710
Kentucky	—	1,296	—	1,296
Mississippi	7,018	26,713	—	33,731
Tennessee	7,816	89,856	—	97,672
Arkansas	112,957	113,909	—	226,866
Louisiana	17,944	10,218	—	28,162
Unknown	51,026	9,020	—	60,046
U. S. Total	28,089,825	13,638,195	307,742	42,035,762

[a] U. S. Bur. Mines, Mineral Market Report, M.M.S. No. 1388, March, 1946.

TABLE 23.—SOURCES OF ALL-RAIL COAL DESTINED FOR CHICAGO, 1942–1945[a]
(In tons)

Source	1942	1943	1944	1945
Western Pennsylvania	5,023	115,385	779	48,908
Central Pennsylvania, Somerset-Myersdale Cumberland-Piedmont	18,147	24,905	19,089	15,541
Fairmont, West Virginia	137,776	53,156	44,391	40,251
Northern and eastern Ohio	1,195	1,618	6,790	1,625
Southern Ohio	2,433	13,989	7,956	5,805
Kanawha, Logan and Kenova-Thacker	2,327,548	2,351,381	2,300,417	1,463,138
New River-Winding Gulf and Pocahontas-Tug River	9,755,335	9,439,189	7,687,840	5,710,337
Northeast Kentucky and McRoberts	2,681,672	3,376,031	3,124,223	2,358,981
Virginia	283,062	338,928	299,815	253,195
Hazard, Harlan, and Southern Appalachian	3,341,359	2,698,608	2,677,139	1,614,198
Ex-river coal	41,377	12,617	13,276	3,390
Northern Illinois	820,140	933,613	760,017	457,548
Central and southern Illinois	6,079,795	7,266,187	7,498,802	6,124,829
Indiana	3,596,192	3,187,672	3,027,145	2,735,638
Western Kentucky	767,164	961,089	1,046,862	1,080,865
Total	29,858,216	30,774,368	28,514,541	21,914,249
Percent of Chicago total supplied by Illinois	23.1	26.6	28.9	30.0

[a] U. S. Bur. Mines Monthly Coal Distribution Reports, Nos. 148 (1943), 160 (1944), 172 (1945).

TABLE 24.—SOURCES OF COAL DESTINED FOR ST. LOUIS, 1942–1945[a]
(In tons)

Source	1942	1943	1944	1945
Central Pennsylvania	32,660	53,266	50,305	35,365
Fairmont, Pa.	1,128	968	758	853
Kanawha, West Virginia	219,782	328,877	312,888	281,166
New River, West Virginia	640,871	709,201	616,372	469,518
Virginia, Northeast Kentucky	301,455	206,734	128,993	97,443
Hazard, Harlan	22,239	28,482	23,029	15,007
Illinois	4,229,879	4,602,507	5,243,887	4,551,281
Indiana	17,115	14,428	13,977	10,975
Western Kentucky	135,184	81,765	37,474	35,989
Ohio	.....	.....	.....	127
Total	5,600,313	6,026,228	6,427,683	5,497,724
Percent of St. Louis total received from Illinois	75.5	76.4	81.6	83.0

[a] U. S. Bur. Mines Monthly Coal Distribution Reports Nos. 148 (1943), 160 (1944), 172 (1945).

METROPOLITAN MARKETS

Sources of coal for the two principal metropolitan markets for Illinois coal are shown in tables 23 and 24.

Tables 25 to 28 present detailed data on production by mines and counties and destination by markets, by uses and by sizes, of coal produced in the State of Illinois.

TABLE 25.—COAL PRODUCTION OF ALL ILLINOIS
(In

Mine Inspection Dist.	County	Shipping Mines					
		Strip		Underground		Total	
		No. of mines	Tons	No. of mines	Tons	No. of mines	Tons
1	Bureau	1	119,320	1	14,029	2	133,349
4	Christian			6	7,479,875	6	7,479,875
13	Clinton			4	384,391	4	384,391
5	Edgar						
10	Franklin			13	17,247,446	13	17,247,446
3	Fulton	9	5,791,266	3	181,907	12	5,973,173
11	Gallatin	2	22,919	1	35,441	3	58,360
7	Greene						
1	Grundy	1	116,029			1	116,029
3	Henry	1	421,667	1	98,103	2	519,770
9	Jackson	1	515,287	3	2,370,150	4	2,885,437
13	Jefferson			1	623,647	1	623,647
3	Knox	2	1,490,613	2	115,538	4	1,606,151
1	LaSalle	1	109,968	2	74,486	3	184,454
1	Livingston						
2	Logan						
14	McDonough						
4	Macon						
6	Macoupin			11	5,328,029	11	5,328,029
7	Madison			6	1,849,574	6	1,849,574
13	Marion			1	169,460	1	169,460
1	Marshall						
4	Menard						
14	Mercer						
6	Montgomery			1	949,517	1	949,517
2	Peoria			1	384,841	1	384,841
9	Perry	2	2,825,758	7	1,525,912	9	4,351,670
9	Randolph	1	1,187,295	3	1,551,805	4	2,739,100
14	Rock Island						
8	St. Clair	1	185,442	15	1,939,823	16	2,125,265
11	Saline	3	665,779	10	3,885,608	13	4,551,387
4	Sangamon			5	2,353,010	5	2,353,010
14	Schuyler	2	185,891			2	185,891
4	Shelby						
2	Stark						
2	Tazewell						
5	Vermilion	1	79,042	4	1,989,744	5	2,068,786
14	Warren						
13	Washington			2	545,571	2	545,571
1	Will	2	1,735,678			2	1,735,678
12	Williamson	6	751,809	19	2,999,433	25	3,751,242
2	Woodford						
	Total	36	16,203,763	122	54,097,340	158	70,301,103

[a] Compiled from Illinois State Dept. Mines and Minerals, Sixty-fourth Annual Coal Report, 1945.
[b] Number of mines reporting production.

MINES, BY TYPE OF MINE, AND BY COUNTIES, 1945[a]
tons)

Local Mines						County Totals			Mine Inspection Dist.
Strip		Underground		Total		No. of mines	Tons	Percent of State total	
No. of mines	Tons	No. of mines	Tons	No. of mines	Tons				
						2	133,349	0.2	1
		2	12,966	2	12,966	8	7,492,841	10.2	4
						4	384,391	0.5	13
		1	33,591	1	33,591	1	33,591	—	5
						13	17,247,446	23.5	10
1	435	24	124,752	25	125,187	37	6,098,360	8.3	3
		7	25,162	7	25,162	10	83,522	0.1	11
		1	16	1	16	1	16	—	7
1	26,292			1	26,292	2	142,321	0.2	1
		6	28,683	6	28,683	8	548,453	0.7	3
		3	34,771	3	34,771	7	2,920,208	4.0	9
1	30			1	30	2	623,677	0.8	13
		3	40,717	3	40,717	7	1,646,868	2.2	3
2	6,228	1	23,532	3	29,760	6	214,214	0.3	1
3	8,886			3	8,886	3	8,886	—	1
		2	60,852	2	60,852	2	60,852	—	2
		5	598	5	598	5	598	—	14
		1	29,683	1	29,683	1	29,683	—	4
						11	5,328,029	7.3	6
		8	280,174	8	280,174	14	2,129,748	2.9	7
						1	169,460	0.2	13
1	543	1	250	2	793	2	793	—	1
		5	52,916	5	52,916	5	52,916	—	4
		1	1,472	1	1,472	1	1,472	—	14
						1	949,517	1 3	6
		26	258,893	26	258,893	27	643,734	0 8	2
1	4,923	3	17,777	4	22,700	13	4,374,370	5 9	9
		6	69,423	6	69,423	10	2,808,523	3 8	9
		2	972	2	972	2	972	—	14
2	755,524	12	139,689	14	895,213	30	3,020,478	4 1	8
		3	6,094	3	6,094	16	4,557,481	6 2	11
		11	145,062	11	145,062	16	2,498,072	3 4	4
1	214	13	16,410	14	16,624	16	202,515	0 3	14
		2	330	2	330	2	330	—	4
		2	243	2	243	2	243	—	2
		3	115,217	3	115,217	3	115,217	0.2	2
3	4,358	18	142,902	21	147,260	26	2,216,046	3.0	5
		1	3,418	1	3,418	1	3,418	—	14
		2	8,511	2	8,511	4	554,082	0.8	13
						2	1,735,678	2.4	1
		30	642,120	30	642,120	55	4,393,362	6.0	12
		1	21,198	1	21,198	1	21,198	—	2
					(Less than 0.1% per mine)			1.4	
16	807,433	206	2,338,394	222	3,145,827	380	73,446,930	100.0	

Summary of Table 25

Type of Mines	1944		1945	
	Number of mines[b]	Net tons produced	Number of mines[b]	Net tons produced
Strip mines:				
Shipping	30	17,108,528	36	16,203,763
Local	18	967,594	15	2,341,637
Total	48	18,076,122	51	18,545,400
Underground mines:				
Shipping	[c]135	56,850,395	122	54,097,340
Local	224	2,473,514	207	3,145,827
Total	[c]359	59,323,909	329	57,243,167
Grand Total	406	77,400,031	380	73,446,930

[a] Compiled from Ill. State Dept. Mines and Minerals, Sixty-fourth Annual Coal Report, 1945.
[b] Number of mines reporting production. [c] One mine reported both strip and underground operations.

Table 26.—Illinois Coal Production, by Quarters for the Years 1941–1945[a]
(In thousands of tons)

	1941		1942		1943		1944		1945	
	Amount	Percent of total	Amount	Percent of total	Amount	Percent of total	Amount	Percent of total	Amount	Percent of total
January-March	16,480	30.1	16,783	25.8	18,819	25.9	20,895	27.2	19,746	27.2
April-June	8,637	15.8	15.343	23.6	15,755	21.7	19,078	24.8	16,976	23.4
July-September	13,965	25.5	15,438	23.7	19,405	26.7	18,170	23.6	16,491	22.7
October-December	15,621	28.6	17,507	26.9	18,652	25.7	18,817	24.4	19,312	26.7
Total	54,703	100.00	65,071	100.0	72,631	100.0	76,960	100.0	72,525	100.0

[a] Compiled from U. S. Bur. Mines Monthly Coal Distribution Reports. Does not include mines with annual production less than 1,000 tons each.

Table 27.—Production of Bituminous Coal in Illinois and the United States, by Months, 1945[a]
(In thousands of tons)

Month	United States	Illinois	
		Amount	Percent of U. S. production
January	52,995	6,930	13.1
February	48,150	6,210	12.9
March	52,450	6,693	12.8
April	43,360	5,560	12.9
May	49,483	5,755	11.6
June	50,987	6,100	12.0
July	47,217	5,400	11.4
August	47,658	5,530	11.6
September	46,938	5,778	12.3
October	39,192	6,679	17.1
November	50,772	6,060	12.0
December	46,798	5,830	12.5
Total	576,000	72,525	
Small mines, and undistributed in Illinois[b]	922	922	
Total	576,922	73,447	[c]12.7

[a] U. S. Bur. Mines, Weekly Coal Report, No. W.C.R. 1494, March 9, 1946.
[b] Illinois State Dept. Mines and Minerals, Annual Coal Report, 1945, for mines with annual production of less than 1,000 tons each. [c] Average.

TABLE 28.—AMOUNT AND VALUE OF COAL PRODUCED IN ILLINOIS, SHOWING NUMBER AND TYPE OF MINES, 1935–1945[a]
(In thousands of tons, and thousands of dollars)

Year	Number of Mines[b]							Production (thousands of tons)							Value at Mines[c]	
	Shipping		Local		Total			Strip			Underground					
	Strip	Underground	Strip	Underground	Strip	Underground	All	Shipping	Local	Total strip	Shipping	Local	Total underground	Total production	Total (thousands of dollars)	Average per ton
1935....	28	154	127	1,041	155	1,195	1,350	7,135	346	7,481	34,275	3,257	37,532	45,013	$ 70,220	$1.56
1936....	30	146	86	980	116	1,126	1,242	8,873	474	9,347	38,412	3,717	42,129	51,476	79,788	1.55
1937....	31	137	70	782	101	919	1,020	11,176	550	11,726	36,886	3,820	40,706	52,432	82,318	1.57
1938....	25	124	74	746	99	870	969	10,059	620	10,679	28,384	3,324	31,708	42,387	63,581	1.50
1939....	26	120	82	748	108	868	976	11,296	990	12,286	31,698	3,643	35,341	47,627	78,108	1.64
1940....	27	112	53	696	80	808	888	12,025	1,255	13,280	34,047	3,955	38,002	51,282	86,667	1.69
1941....	29	113	29	628	58	741	799	13,361	881	14,242	37,673	3,451	41,124	55,366	100,212	1.81
1942....	28	114	30	513	58	627	684	14,827	1,111	15,938	46,297	3,511	49,808	65,746	125,575	1.91
1943....	26	116	22	326	48	442	489	15,485	1,314	16,799	53,487	3,059	56,546	73,345	156,224	2.13
1944....	30	135	18	224	48	359	406	17,108	968	18,076	56,850	2,474	59,324	77,400	*172,602	*2.23
1945....	36	122	16	206	52	328	380	16,204	807	17,011	54,097	2,342	56,436	73,447	163,787	2.23

* Revised figures.
[a] Compiled from Illinois State Dept. Mines and Minerals, Annual Coal Reports.
[b] Number of mines reporting production during year indicated.
[c] Based on total production at average price for each year, which is derived from the following sources:
For years 1935, 1939, 1940—45 incl.—U. S. Bureau of Mines, Minerals Yearbooks and M.M.S. 1359, Nov. 19, 1945; 1935 and 1939 exclude selling costs, 1940-1945, incl., include selling costs.
For years 1936, 1937, 1938—U. S. Department of the Interior, Bituminous Coal Division, cost of production includes selling cost.

TABLE 29.—COAL MINE PRICES, PER TON, DECEMBER 1944 and DECEMBER 1945[a]

	December, 1944	December, 1945
Southern Illinois		
Freight rate to Chicago, $2.05 a ton		
Lump	$ 3.30	$ 3.40
Egg	2.55– 3.00	3.40
Nut	2.40	2.64–3.10
Washed screenings	2.10	2.55
Mine run	2.60	
Central Illinois		
Freight rate to Chicago, $1.75 a ton		
Lump	2.45– 3.20	2.55–2.75
Egg	2.45– 3.00	2.55–2.75
Nut	2.35– 2.70	2.45–2.65
Washed screenings	2.05– 2.60	2.20
Screenings	1.75– 2.35	1.90–2.50
Mine run	2.00– 2.65	
Indiana, No. 4		
Freight rates to Chicago, $1.65 and $1.75 a ton		
Lump	2.70– 2.95	2.70–2.95
Egg	2.60– 2.85	2.60–2.85
Stoker nut	1.95– 2.40	1.95–2.40
Nut	1.95– 2.40	1.95–2.40
Screenings	1.85– 2.05	1.85–2.05
Mine run	2.50– 2.60	2.50–2.60
Indiana, No. 5		
Freight rates to Chicago, $1.65, $1.87, and $1.90 a ton		
Lump	2.55– 3.00	2.55–3.00
Egg	2.45– 2.60	2.45–2.60
Stoker nut	1.85– 2.10	1.85–2.10
Nut	2.30– 2.45	2.30–2 45
Screenings	1.75– 1.90	1.75–1.90
Mine run	2.40– 2.45	2.40–2.45
West Virginia Smokeless, New River, and Pocahontas		
Freight rate to Chicago, $3.39 a ton		
Lump	3.95	3.91–4.61
Egg	4.05	3.91–4.71
Stove	4.10	4.36–4.41
Nut	3.55	3.66–3.81
Stoker pea	3.45	3.61–3.71
Mine run (Dom.)	3.80	3.96–4.06
Straight mine run	3.45– 3.65	3.71–3.91
Slack	2.70– 2.90	2.96–3.16
Briquets	5.25	5.25
Eastern Kentucky Millers Creek—Great Heart		
Freight rate to Chicago, $3.19 a ton		
Block	4.35– 4.40	4.65
Furnace	4.35– 4.40	4.50–4.65
Small egg		
Stoker nut	4.05– 4.15	4.20–4.40
Screenings	2.90– 3.10	3.05–3.40
East Kentucky, West Virginia, High Volatile		
Freight rate to Chicago, $3.19 a ton		
Block	3.50– 3.80	3.65–3.95
Furnace	3.20– 3.55	3.35–3.70
Small egg	3.10	3.25
Stoker nut	3.40– 3.80	3.55–3.95
Screenings		
West Kentucky, No. 9 and No. 11		
Freight rate to Chicago, $2.30 a ton		
Lump, 6″	2.25– 2.40	2.25–2.40
Egg, 6″x3″	2.20– 2.40	2.20–2.40
Stoker nut	1.85– 2.50	1.85–2.50
Screenings	1.65– 1.95	1.65–1.95
Mine run	2.10– 2 30	2.10–2.30

TABLE 29.—CONTINUED

	December, 1944	December, 1945
Western Kentucky, No. 6		
Freight rate to Chicago, $2.30 a ton		
Lump, 6″	$ 2.70	$ 2.70
Egg, 6″x3″	2.70	2.70
Stoker nut	3.10	3.10
Screenings	2.45	2.45
Western Kentucky, No. 14		
Freight rate to Chicago, $2.30 a ton		
Lump, 6″	2.45	2.51
Egg, 6″x3″	2.45	2.51
Nut, 3″x2″	2.45	2.51
Chestnut	2.20	2.26
Screenings, 2″	2.00	2.11
Anthracite		
Freight rate to Chicago from mines in Pennsylvania, $4.26 a ton		
Grate, egg, stove, chestnut	7.85	9.00
Pea	6.30	7.30
Buckwheat	4.65	5.25
Rice	3.75	4.30
Coke		
F. O. B. dealers yards in Chicago, f.o.b. ovens, 15 cents a ton less		
Egg, range, nut	14.80	17.70
Pea	13.80	16.00
Foundry (at Chicago ovens)		

[a] Chicago Journal of Commerce.

TABLE 30.—COAL CONSUMED IN THE ILLINOIS COAL MARKET AREA (EXCLUSIVE OF RAILROAD FUEL), 1944–1945[a]

Source	1944	1945
Distribution of total production (all rail) from mines in U. S.		
Illinois	41,849,010	38,200,066
Wisconsin	4,289,562	4,106,165
Iowa	6,937,902	7,122,466
Kansas	2,494,774	2,079,281
Minnesota	1,525,182	1,676,937
Missouri	8,045,783	7,854,271
Nebraska	2,271,734	2,108,321
North Dakota	55,037	61,102
South Dakota	468,329	470,687
Waterborne shipments via Lake and Tidewater summaries by consumer states of destination		
Illinois	2,373,177	2,061,180
Wisconsin	8,637,206	8,889,006
Iowa	110,831	106,392
Kansas	—	—
Minnesota	3,733,429	3,910,221
Missouri	—	—
Nebraska	10,216	8,311
North Dakota	200,586	208,934
South Dakota	348,114	348,775
Total shipments to consumers—All movements and uses		
Illinois	44,222,187	40,261,246
Wisconsin	12,926,768	12,995,171
Iowa	7,048,733	7,228,858
Kansas	2,494,774	2,079,281
Minnesota	5,258,611	5,587,158
Missouri	8,045,783	7,854,271
Nebraska	2,281,950	2,116,632
North Dakota	255,623	270,036
South Dakota	816,443	819,462
Grand Total	83,350,872	79,212,115

[a] U. S. Bur. Mines Monthly Coal Distribution Reports, Nos. 160 (1944), 172 (1945).

Table 31.—Shipments of Bituminous Coal by Sizes from Illinois, 1945[a]
(In Tons)

Size	Amount	Percent
All lump coal and all double screened coal with top size over 2 inches	22,397,852	31.8
All double screened coal with top size not exceeding 2 inches	3,716,267	5.3
Modified mine-run, domestic mine-run, screened mine-run, and altered mine-run and minus resultant with top size over 2 inches	16,656,600	23.6
All minus resultant and dedusted screenings with top size over ¾ inch and not exceeding 2 inches	24,195,550	34.3
All minus resultant and dedusted screenings with top size not exceeding ¾ inch	3,575,635	5.0
Total	70,541,904	100.0
Size not reported	25,743	
Coal used at mines	1,107,616	
Net change in inventory	6,188	
Grand Total	71,681,451	

[a] Data compiled from U. S. Bureau Mines Monthly Coal Distribution Report No. 172, 1945.

COAL PRICES IN 1945

Coal prices—mine, lake cargo, and retail—were subject to price ceilings imposed by the Office of Price Administration. During 1944 some changes occurred in mine prices of coal in those districts serving the markets of the Upper Mississippi Valley.

Table 32.—Source of Bituminous Coal, Shipped to Illinois, by All-rail, River and Ex-River, (Exclusive of Railroad Fuel) 1945[a]
(In tons)

District No.	Total
1	20,006
2	12,422
3	44,742
4	7,798
5	—
6	—
7	4,827,646
8	2,853,775
9	1,028,211
10	25,836,193
11	3,530,458
12	—
13	41
14	38,208
15	566
Total	38,200,066

[a] U. S. Bureau Mines Monthly Coal Distribution Report, No. 172, 1945.

Degree-Days

Degree-days are the number of degrees of temperature that the average temperature for each day falls below 65° Fahrenheit. These are totaled for each month and a cumulative total for the heating season through each month is determined. These data averaged over a long period of time give a reliable guide to the fuel needs of the locality in which the temperatures are recorded. This information is given in table 34.

Figure 9 shows the modified degree-day belts of the state numbered from 1 to 8. District 8 comprises St. Louis city and county and is included in the tabulations because of the interest of the Illinois coal industry in this large market.

In table 33 is shown the number of heating units by each type of fuel used, for each of the degree-day belts outlined on the map.

TABLE 33.—TYPES OF HEATING EQUIPMENT, BY DEGREE-DAY DISTRICTS[a]

Units With Central Heating

District No.	Coal	Wood	Gas	Fuel oil	Total	Other fuel and not reported
1	60,076	1,250	1,166	5,820	68,312	685
2	807,045	1,099	30,100	46,366	884,610	12,138
3	101,484	841	1,435	3,301	107,061	872
4	140,604	535	5,420	3,109	149,668	2,741
5	55,464	680	804	854	57,802	783
6	36,169	163	127	720	37,179	240
7	9,426	34	13	40	9,513	82
8 St. Louis, Mo.						
St. Louis County	45,379	129	4,868	6,486	56,862	204
St. Louis City	134,419	56	3,650	4,802	142,927	1,399
Total	1,390,066	4,787	47,583	71,498	1,513,934	19,144

Units Without Central Heating

District No.	Coal	Wood	Gas	Fuel oil	Gas or Kero.	Total	Other fuel and not reported	None
1	19,753	3,002	117	3,958	152	26,982	96	26
2	224,896	3,991	5,529	87,642	581	322,639	1,235	318
3	57,043	4,319	238	3,008	294	64,902	319	69
4	112,727	8,847	864	2,168	357	124,963	495	79
5	90,881	28,595	1,641	1,712	858	123,687	581	105
6	78,043	14,895	704	636	278	94,556	258	48
7	48,115	7,777	26	126	102	56,146	162	87
8 St. Louis, Mo.								
St. Louis Co.	13,422	1,671	130	656	136	16,015	62	25
St. Louis City	83,434	295	752	2,928	156	87,565	272	247
Total	728,314	73,392	10,001	102,834	2,914	917,455	3,480	1,004

[a] Source: U. S. Census, Housing, Illinois, 2nd Series, 1939.

Because of the close relationship between the number of degree-days accumulated during the heating season and the quantity of fuels consumed, a degree-day map of Illinois and a table showing degree-day records for the past heating season compared with the normal is useful in estimating domestic fuel consumption. In this issue a modified degree-day map has been prepared in which county boundaries are used to mark the boundaries of degree-day belts. While this results in some inaccuracies, the purpose is to show the number and types of heating units in each degree-day belt. Since these latter are reported by county units only, it was necessary to prepare a map in which boundaries of degree-day belts conformed to the nearest county boundary.

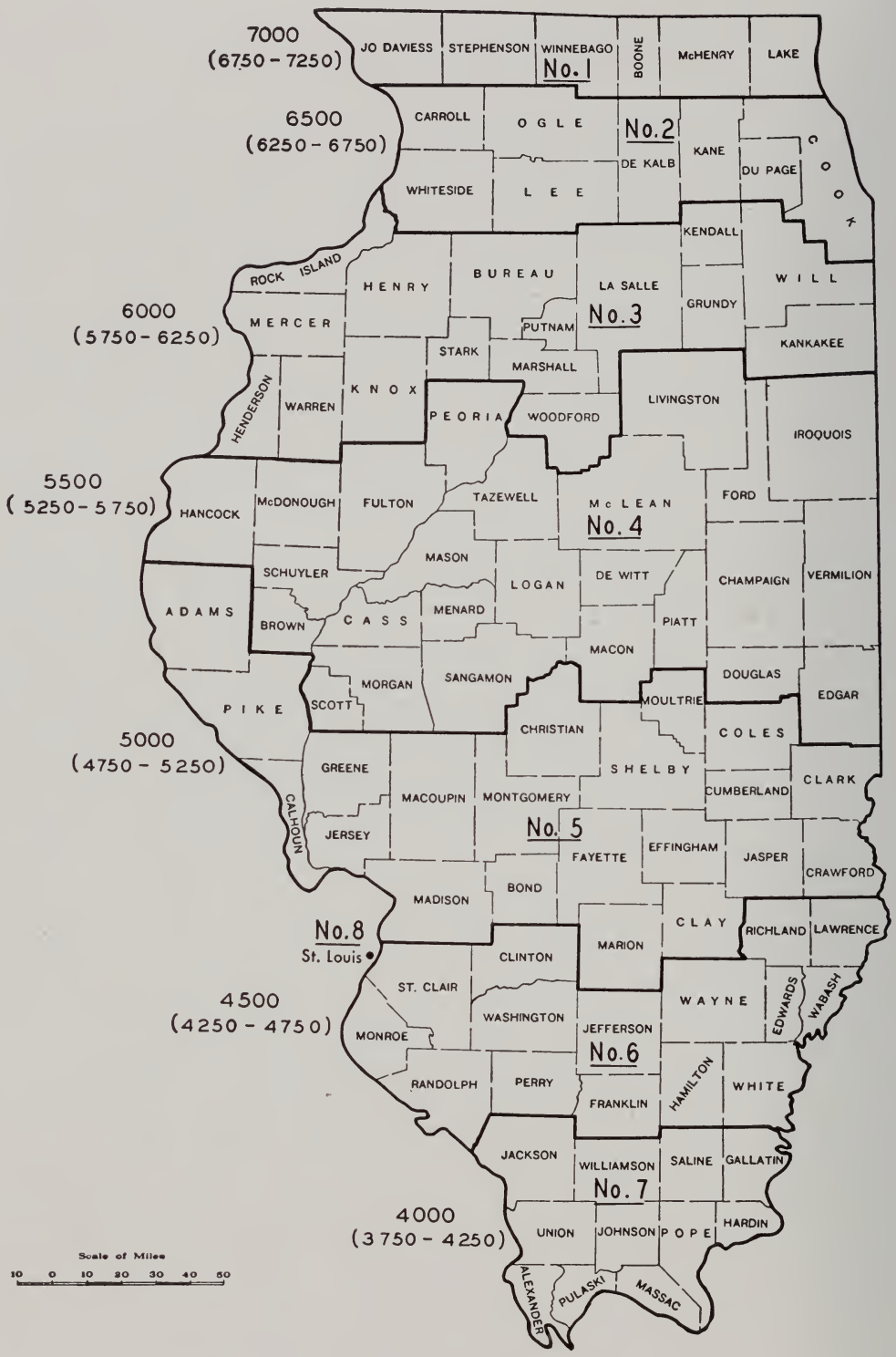

FIG. 9.—Degree-day districts, with averages and ranges.

TABLE 34.—NUMBER OF DEGREE-DAYS FOR REPRESENTATIVE CITIES AND TOWNS IN ILLINOIS BY MONTHS, 1945–1946, COMPARED WITH THE AVERAGE FOR THE PERIOD IN WHICH RECORDS HAVE BEEN KEPT, TO THE CLOSE OF 1945[a, b]

Month	Aledo (Pop. 2,593)				Anna (Pop. 4,092)			
	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total
September	0	0	0	—	0	0	0	—
October	372	341	341	5.7	248	155	155	3.8
November	720	750	1,091	12.6	510	540	695	13.2
December	1,333	1,147	2,238	19.3	1,085	868	1,563	21.2
January	1,147	1,271	3,509	21.4	899	961	2,524	23.4
February	924	1,092	4,601	18.4	644	784	3,308	19.1
March	496	806	5,407	13.5	279	558	3,866	13.5
April	330	450	5,857	7.5	150	240	4,106	5.8
May	217	93	5,950	1.6	93	0	4,106	—
Total	5,539	(46 yrs.)	5,950	100.0	3,908	(62 yrs.)	4,106	100.0
Departure from normal	−566				+101			

	Aurora (Pop. 47,170)				Bloomington (Pop. 32,868)			
September	0	30	30	0.5	0	0	0	—
October	465	403	433	6.2	310	310	310	5.4
November	780	810	1,243	12.5	720	720	1,030	12.5
December	1,395	1,178	2,421	18.1	1,302	1,085	2,115	18.8
January	1,209	1,333	3,754	20.5	1,116	1,209	3,324	20.9
February	1,008	1,120	4,874	17.2	896	1,288	4,612	22.3
March	558	930	5,804	14.3	434	806	5,418	13.9
April	420	510	6,314	7.8	300	300	5,718	5.2
May	248	186	6,500	2.9	186	62	5,780	1.0
Total	6,083	(67 yrs.)	6,500	100.0	5,258	(55 yrs.)	5,780	100.0
Departure from normal	−417				−522			

	Cairo (Pop. 14,407)				Carbondale (Pop. 8,550)			
September	0	0	0	—	0	0	0	—
October	186	155	155	4.0	248	155	155	3.9
November	450	510	665	13.2	540	540	695	13.4
December	992	806	1,471	20.9	1,085	868	1,563	21.6
January	806	899	2,370	23.2	899	930	2,493	23.2
February	588	756	3,126	19.6	644	756	3,249	18.8
March	186	527	3,653	13.6	217	558	3,807	13.9
April	30	210	3,863	5.5	120	210	4,017	5.2
May	0	0	3,863	—	62	0	4,017	—
Total	3,238	(74 yrs.)	3,863	100.0	3,815	(42 yrs.)	4,017	100.0
Departure from normal	−625				−202			

[a] Compiled from U. S. Dept. Commerce, Weather Bureau, Climatological Data.
[b] Population from Sixteenth Census of the United States, 1940.
[c] Mean—Monthly totals for heating season; Av.—Monthly average over total period for which records have been kept.

TABLE 34.—(Continued)

Month	Carlinville (Pop. 4,965)				Charleston (Pop. 8,197)			
	Mean[e] 1945–46	Av.	Cum. Av.	Percent of average yearly total	Mean[e] 1945–46	Av.	Cum. Av.	Percent of average yearly total
September	0	0	0	—	—	0	0	—
October	310	248	248	5.0	—	279	279	5.4
November	630	630	878	12.7	—	660	939	12.8
December	1,178	992	1,870	20.0	1,209	992	1,931	19.4
January	992	1,116	2,986	22.6	1,023	1,116	2,047	21.6
February	756	924	3,910	18.6	812	952	3,999	18.4
March	279	682	4,592	13.8	310	713	4,712	13.8
April	210	330	4,922	6.7	270	360	5,072	7.0
May	124	31	4,953	0.6	124	93	5,165	1.8
Total	4,479	(56 yrs.)	4,953	100.0	—	(61 yrs.)	5,165	100.0
Departure from normal	−474				—			

	Chicago (Pop. 3,396,808)				Danville (Pop. 36,919)			
September	30	0	0	—	0	0	0	—
October	434	341	341	5.5	372	279	279	5.2
November	720	750	1,091	12.0	690	690	969	12.9
December	1,302	1,116	2,207	17.9	1,271	1,054	2,023	19.7
January	1,147	1,271	3,478	20.4	1,085	1,147	3,170	21.5
February	1,008	1,064	4,542	17.1	868	980	4,150	18.3
March	558	899	5,441	14.4	403	744	4,894	13.9
April	420	540	5,981	8.7	330	390	5,284	7.3
May	279	248	6,229	4.0	186	62	5,346	1.2
Total	5,898	(76 yrs.)	6,229	100.0	5,205	(44 yrs.)	5,346	100.0
Departure from normal	−331				−141			

	Decatur (Pop. 59,305)				Dixon (Pop. 10,671)			
September	0	0	0	—	30	0	0	—
October	310	279	279	5.2	434	403	403	6.2
November	660	690	969	12.8	780	810	1,213	12.5
December	1,240	1,054	2,023	19.6	1,395	1,209	2,422	18.7
January	1,054	1,178	3,201	21.9	1,209	1,364	3,786	21.1
February	840	1,008	4,209	18.8	1,036	1,148	4,934	17.8
March	341	744	4,953	13.8	527	899	5,833	13.9
April	270	360	5,313	6.7	330	480	6,313	7.4
May	186	62	5,375	1.2	217	155	6,468	2.4
Total	4,901	(55 yrs.)	5,375	100.0	5,958	(56 yrs.)	6,468	100.0
Departure from normal	−474				−510			

TABLE 34.—(Continued)

Month	DuQuoin (Pop. 7,515)				Effingham (Pop. 6, 180)			
	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total
September	0	0	0	—	0	0	0	—
October	248	186	186	4.3	341	248	248	5.0
November	510	570	756	13.1	690	660	908	13.4
December	1,054	899	1,655	20.7	1,240	992	1,900	20.0
January	899	992	2,647	22.8	1,085	1,085	2,985	21.9
February	672	840	3,487	19.3	728	924	3,909	18.6
March	217	589	4,076	13.6	341	682	4,591	13.8
April	150	270	4,346	6.2	300	330	4,921	6.7
May	62	0	4,346	—	186	31	4,952	0.6
Total	3,812	(55 yrs.)	4,346	100.0	4,911	(46 yrs.)	4,952	100.0
Departure from normal	−534				− 41			

	Fairfield (Pop. 4,008)				Flora (Pop. 5,474)			
September	0	0	0	—	0	0	0	—
October	279	186	186	4.2	310	248	248	5.2
November	540	570	756	13.0	570	630	878	13.2
December	1,116	930	1,686	21.1	1,116	961	1,839	20.2
January	961	992	2,678	22.5	992	1,054	2,893	22.1
February	672	840	3,518	19.0	728	896	3,789	18.8
March	248	620	4,138	14.1	310	651	4,440	13.6
April	180	270	4,408	6.1	210	300	4,740	6.3
May	93	0	4,408	—	124	31	4,771	0.6
Total	4,089	(52 yrs.)	4,408	100.0	4,360	(59 yrs.)	4,771	100.0
Departure from normal	−319				−411			

	Freeport (Pop. 22,366)				Galva (Pop. 2,812)			
September	90	60	60	0.9	30	0	0	—
October	527	434	494	6.4	434	341	341	5.6
November	840	840	1,334	12.3	780	780	1,121	12.6
December	1,457	1,240	2,574	18.2	1,395	1,178	2,299	19.2
January	1,271	1,426	4,000	20.8	1,178	1,302	3,601	21.2
February	1,092	1,176	5,176	17.2	980	1,120	4,721	18.3
March	620	961	6,137	14.1	496	837	5,558	13.6
April	390	510	6,647	7.4	360	450	6,008	7.3
May	248	186	6,833	2.7	248	124	6,132	2.2
Total	6,535	(40 yrs.)	6,833	100.0	5,901	(54 yrs.)	6,132	100 0
Departure from normal	−298				−231			

[a] Compiled from U. S. Dept. Commerce, Weather Bureau, Climatological Data.
[b] Population from Sixteenth Census of the United States, 1940.
[c] Mean—Monthly totals for heating season; Av.—Monthly average over total period for which records have been kept.

TABLE 34.—(Continued)

Month	Greenville (Pop. 3,391)				Griggsville (Pop. 1,266)			
	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total
September	0	0	0	—	0	0	0	—
October	248	248	248	5.0	279	248	248	4.8
November	570	660	908	13.4	660	660	908	12.9
December	1,116	992	1,900	20.2	1,271	1,023	1,931	19.9
January	961	1,085	2,985	22.0	1,054	1,147	3,078	22.4
February	700	924	3,909	18.8	784	980	4,058	19.1
March	279	682	4,591	13.9	310	713	4,771	13.9
April	210	300	4,891	6.1	240	330	5,101	6.4
May	93	31	4,922	0.6	124	31	5,132	0.6
Total	4,177	(68 yrs.)	4,922	100.0	4,722	(60 yrs.)	5,132	100.0
Departure from normal	−745				−410			

	Harrisburg (Pop. 11,453)				Havana (Pop. 3,999)			
September	0	0	0	—	0	0	0	—
October	248	155	155	3.9	341	279	279	5.1
November	480	510	665	12.8	690	690	969	12.6
December	1,023	837	1,502	21.0	1,302	1,054	2,023	19.3
January	868	930	2,432	23.4	1,085	1,178	3,201	21.6
February	616	784	3,216	19.7	840	1,008	4,209	18.4
March	217	527	3,743	13.2	372	744	4,953	13.6
April	120	240	3,983	6.0	270	360	5,313	6.6
May	31	0	3,983	—	155	155	5,468	2.8
Total	3,603	(47 yrs.)	3,983	100.0	5,055	(54 yrs.)	5,468	100.0
Departure from normal	−380				−413			

	Henry (Pop. 1,877)				Hillsboro (Pop. 4,514)			
September	0	0	0	—	0	0	0	—
October	403	341	341	5.7	279	248	248	5.0
November	720	750	1,091	12.5	600	630	878	12.8
December	1,333	1,116	2,207	18.7	1,178	992	1,870	20.2
January	1,147	1,271	3,478	21.3	992	1,085	2,955	22.0
February	952	1,148	4,626	19.2	756	924	3,879	18.8
March	434	837	5,463	14.0	279	682	4,561	13.9
April	300	420	5,883	7.0	210	330	4,891	6.7
May	186	93	5,976	1.6	124	31	4,922	0.6
Total	5,475	(58 yrs.)	5,976	100.0	4,418	(52 yrs.)	4,922	100.0
Departure from normal	−501				−504			

TABLE 34.—(Continued)

Month	Hoopeston (Pop. 5,381)				Jacksonville (Pop. 19,844)			
	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total
September	0	0	0	—	0	0	0	—
October	403	341	341	6.1	310	279	279	5.3
November	690	690	1,031	12.3	660	660	939	12.5
December	1,302	1,085	2,116	19.4	1,271	1,054	1,993	19.9
January	1,116	1,178	3,294	21.2	1,054	1,147	3,140	21.7
February	924	1,008	4,302	18.0	812	980	4,120	18.5
March	403	775	5,077	13.8	310	744	4,864	14.1
April	330	420	5,497	7.5	270	360	5,224	6.8
May	186	93	5,590	1.7	155	62	5,286	1.2
Total	5,354	(43 yrs.)	5,590	100.0	4,842	(53 yrs.)	5,286	100.0
Departure from normal	−236				−444			

	Joliet (Pop. 42,365)				Kankakee (Pop. 22,241)			
September	60	0	0	—	0	0	0	—
October	465	372	372	6.2	372	341	341	5.8
November	780	750	1,122	12.4	690	720	1,061	12.3
December	1,395	1,036	2,158	17.1	1,302	1,116	2,177	19.0
January	1,209	1,271	3,429	21.0	1,147	1,240	3,417	21.2
February	1,036	1,120	4,549	18.5	952	1,008	4,425	17.2
March	558	868	5,417	14.3	465	806	5,231	13.7
April	450	480	5,897	7.9	330	480	5,711	8.2
May	279	155	6,052	2.6	186	155	5,866	2.6
Total	6,232	(55 yrs.)	6,052	100.0	5,444	(30 yrs.)	5,866	100.0
Departure from normal	+180				−360			

	La Harpe (Pop. 1,322)				Lincoln (Pop. 12,752)			
September	0	0	0	—	0	0	0	—
October	341	310	310	5.4	341	310	310	5.7
November	720	720	1,030	12.6	690	690	1,000	12.6
December	1,333	1,116	2,146	19.4	1,271	1,054	2,054	19.3
January	1,116	1,209	3,355	21.0	1,085	1,178	3,232	21.5
February	868	1,064	4,419	18.6	868	1,008	4,240	18.4
March	403	806	5,225	14.1	372	775	5,015	14.2
April	240	420	5,645	7.3	270	390	5,405	7.2
May	155	93	5,738	1.6	155	62	5,467	1.1
Total	5,176	(51 yrs.)	5,738	100.0	5,052	(58 yrs.)	5,467	100.0
Departure from normal	−562				−415			

[a] Compiled from U. S. Dept. Commerce, Weather Bureau, Climatological Data.
[b] Population from Sixteenth Census of the United States, 1940.
[c] Mean—Monthly totals for heating season; Av.—Monthly average over total period for which records have been kept.

TABLE 34.—(Continued)

Month	McLeansboro (Pop. 2,528)				Marengo (Pop. 2,034)			
	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total
September	0	0	0	—	90	90	90	1.3
October	217	186	186	4.2	496	465	555	6.5
November	480	570	756	13.0	810	870	1,425	12.2
December	1,054	899	1,655	20.4	1,426	1,271	2,696	17.8
January	899	1,023	2,678	23.3	1,240	1,426	4,122	20.0
February	644	840	3,518	19.1	1,092	1,204	5,326	16.9
March	217	612	4,138	13.4	620	1,023	6,349	14.4
April	120	270	4,408	6.1	420	570	6,919	8.0
May	31	0	4,408	—	248	210	7,129	2.9
Total	3,662	(64 yrs.)	4,408	100.0	6,442	(86 yrs.)	7,129	100.0
Departure from normal	−715				−687			

	Mascoutah (Pop. 2,294)				Minonk (Pop. 1,897)			
September	0	0	0	—	0	0	0	—
October	248	217	217	4.7	403	341	341	5.7
November	540	630	847	13.7	750	750	1,091	12.5
December	1,116	930	1,777	20.3	1,364	1,147	2,238	19.2
January	961	1,023	2,800	22.3	1,147	1,271	3,509	21.3
February	672	868	3,668	18.9	952	1,092	4,601	18.3
March	248	620	4,288	13.5	496	837	5,438	14.0
April	150	300	4,588	6.6	360	450	5,888	7.5
May	62	0	4,588	—	217	93	5,981	1.5
Total	3,997	(56 yrs.)	4,588	100.0	5,689	(52 yrs.)	5,981	100.0
Departure from normal	−591				−292			

	Monmouth (Pop. 9,096)				Morrison (Pop. 3,187)			
September	0	0	0	—	30	0	0	—
October	372	341	341	5.8	434	372	372	6.0
November	750	750	1,091	12.7	780	780	1,152	12.6
December	1,364	1,147	2,238	19.5	1,364	1,209	2,361	19.5
January	1,147	1,302	3,540	22.1	1,178	1,209	3,570	19.5
February	924	1,092	4,632	18.6	1,008	1,148	4,718	18.6
March	434	806	5,438	13.7	527	868	5,586	14.1
April	300	420	5,858	7.1	330	480	6,066	7.8
May	186	31	5,889	0.5	217	120	6,186	1.9
Total	5,477	(54 yrs.)	5,889	100.0	5,868	(51 yrs.)	6,186	100.0
Departure from normal	−412				−318			

TABLE 34.—(Continued)

Month	Mt. Carmel (Pop. 6,987)				Mt. Carroll (Pop. 1,845)			
	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total
September	0	0	0	—	60	60	60	0.9
October	248	186	186	4.2	434	434	494	6.4
November	510	600	786	13.4	810	840	1,334	12.4
December	1,085	930	1,716	20.8	1,395	1,240	2,574	18.4
January	930	992	2,708	22.3	1,209	1,364	3,938	20.2
February	672	868	3,576	19.4	1,036	1,176	5,114	17.5
March	217	589	4,165	13.2	558	930	6,044	13.8
April	150	300	4,465	6.7	360	510	6,554	7.6
May	62	0	4,465	—	248	186	6,740	2.8
Total	3,874	(44 yrs.)	4,465	100.0	6,110	(56 yrs.)	6,740	100.0
Departure from normal	−591				−630			

	Mt. Vernon (Pop. 14,724)				New Burnside (Pop. 299)			
September	0	0	0	—	0	0	0	—
October	279	217	217	4.8	248	155	155	3.8
November	570	600	817	13.2	510	540	695	13.3
December	1,147	930	1,747	20.4	1,085	868	1,563	21.3
January	992	1,023	2,770	22.4	930	930	2,493	22.8
February	728	868	3,638	19.0	672	756	3,249	18.5
March	248	620	4,258	13.6	248	558	3,807	13.7
April	150	300	4,558	6.6	150	270	4,077	6.6
May	93	0	4,558	—	93	0	4,077	—
Total	4,207	(51 yrs.)	4,558	100.0	3,936	(35 yrs.)	4,077	100.0
Departure from normal	−351				−141			

	Olney (Pop. 7,831)				Ottawa (Pop. 16,005)			
September	0	0	0	—	0	0	0	—
October	279	217	217	4.6	403	341	341	5.7
November	540	600	817	12.8	720	750	1,091	12.6
December	1,116	961	1,778	20.6	1,333	1,116	2,207	18.7
January	961	1,023	2,801	21.9	1,147	1,240	3,447	20.8
February	728	896	3,697	19.2	980	1,064	4,511	17.9
March	248	651	4,348	13.8	496	837	5,348	14.1
April	210	330	4,678	7.1	300	450	5,798	7.6
May	93	0	4,678	—	186	155	5,953	2.6
Total	4,175	(50 yrs.)	4,678	100.0	5,565	(58 yrs.)	5,953	100.0
Departure from normal	−503				−388			

[a] Compiled from U. S. Dept. Commerce, Weather Bureau, Climatological Data.
[b] Population from Sixteenth Census of the United States, 1940.
[c] Mean—Monthly totals for heating season; Av.—Monthly average over total period for which records have been kept.

TABLE 34.—(Continued)

Month	Palestine (Pop. 1,626)				Pana (Pop. 5,966)			
	Mean[e] 1945–46	Av.	Cum. Av.	Percent of average yearly total	Mean[e] 1945–46	Av.	Cum. Av.	Percent of average yearly total
September	0	0	0	—	0	0	0	—
October	310	248	248	5.1	310	279	279	5.4
November	600	660	908	13.5	660	660	939	12.7
December	1,178	961	1,869	19.6	1,209	1,023	1,962	19.7
January	1,023	1,085	2,954	22.2	1,054	1,147	3,109	22.1
February	756	896	3,850	18.3	784	952	4,061	18.3
March	279	682	4,532	13.9	310	713	4,774	13.7
April	240	330	4,882	6.8	240	360	5,134	6.9
May	124	31	4,893	0.6	124	62	5,196	1.2
Total	4,510	(64 yrs.)	4,893	100.0	4,711	(57 yrs.)	5,196	100.0
Departure from normal	−353				−485			
	Paris (Pop. 9,281)				Peoria (Pop. 105,087)			
September	0	0	0	—	0	0	0	—
October	310	279	279	5.2	310	372	372	6.3
November	630	690	969	12.8	750	780	1,152	13.2
December	1,209	1,054	2,023	19.6	1,333	1,116	2,268	18.9
January	1,085	1,147	3,170	21.3	1,178	1,271	3,539	21.6
February	812	980	4,150	18.2	952	1,036	4,575	17.6
March	310	775	4,925	14.4	465	806	5,381	13.7
April	240	390	5,315	7.3	330	420	5,801	7.1
May	93	62	5,377	1.2	217	93	5,894	1.6
Total	4,689	(53 yrs.)	5,377	100.0	5,535	(91 yrs.)	5,894	100.0
Departure from normal	−688				−359			
	Pontiac (Pop. 9,585)				Quincy (Pop. 40,469)			
September	0	0	0	—	0	0	0	—
October	372	310	310	5.5	279	217	217	4.4
November	690	690	1,000	12.2	630	630	847	12.8
December	1,302	1,085	2,085	19.2	1,240	992	1,839	20.2
January	1,116	1,209	3,294	21.4	1,023	1,147	2,986	23.2
February	924	1,036	4,330	18.4	784	924	3,910	18.8
March	465	806	5,136	14.3	279	682	4,592	13.9
April	330	420	5,556	7.4	210	330	4,922	6.7
May	217	93	5,649	1.6	93	0	4,922	—
Total	5,416	(48 yrs.)	5,649	100.0	4,538	(25 yrs.)	4,922	100.0
Departure from normal	−233				−384			

TABLE 34.—(Continued)

Month	Rockford (Pop. 84,637)				Rushville (Pop. 2,480)			
	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total
September	30	30	30	0.5	0	0	0	—
October	403	403	433	6.1	372	279	279	5.2
November	780	810	1,243	12.2	720	720	999	13.2
December	1,395	1,209	2,452	18.3	1,302	1,054	2,053	19.5
January	1,240	1,364	3,816	20.6	1,116	1,178	3,231	21.7
February	1,064	1,176	4,992	17.8	896	1,008	4,239	18.5
March	620	930	5,922	14.0	372	744	4,983	13.7
April	150	510	6,432	7.7	300	360	5,343	6.7
May	279	186	6,618	2.8	186	62	5,405	1.5
Total	5,961	(59 yrs.)	6,618	100.0	5,264	(55 yrs.)	5,405	100.0
Departure from normal	−657				−324			

	Sparta (Pop. 3,664)				Springfield (Pop. 75,503)			
September	0	0	0	—	0	0	0	—
October	217	186	186	4.3	279	279	279	5.3
November	510	570	756	13.1	660	690	969	13.0
December	1,085	899	1,655	20.7	1,240	1,023	1,992	19.4
January	899	992	2,647	22.8	1,054	1,147	3,139	21.7
February	644	840	3,487	19.3	840	980	4,119	18.5
March	217	589	4,076	13.6	310	744	4,863	14.1
April	120	270	4,346	6.2	240	360	5,223	6.8
May	62	0	4,346		124	62	5,285	1.2
Total	3,754	(60 yrs.)	4,346	100.0	4,747	(67 yrs.)	5,285	100.0
Departure from normal	−592				−538			

	Sycamore (Pop. 4,702)				Urbana (Pop. 14,064)			
September	90	60	60	0.9	0	0	0	—
October	496	434	494	6.4	372	310	310	5.5
November	840	840	1,334	12.4	690	720	1,030	12.7
December	1,426	1,209	2,543	17.7	1,302	1,116	2,146	19.7
January	1,271	1,364	3,907	20.0	1,116	1,178	3,324	20.7
February	1,092	1,176	5,083	17.3	896	1,008	4,332	17.7
March	620	961	6,044	14.1	403	775	5,107	13.6
April	420	540	6,584	8.0	300	450	5,557	7.9
May	279	217	6,801	3.2	186	124	5,681	2.2
Total	6,534	(66 yrs.)	6,801	100.0	5,265	(44 yrs.)	5,681	100.0
Departure from normal	−267				−416			

[a] Compiled from U. S. Dept. Commerce, Weather Bureau, Climatological Data.
[b] Population from Sixteenth Census of the United States, 1940.
[c] Mean—Monthly totals for heating season; Av.—Monthly average over total period for which records have been kept.

(Table 34.—Concluded)

Month	Walnut (Pop. 961)				Waukegan (Pop. 34,241)			
	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total	Mean[c] 1945–46	Av.	Cum. Av.	Percent of average yearly total
September	0	30	30	0.5	30	30	30	0.5
October	434	341	371	5.5	434	403	433	6.1
November	750	780	1,151	12.6	750	780	1,213	11.8
December	1,364	1,178	2,329	19.1	1,333	1,147	2,360	17.4
January	1,178	1,302	3,631	21.2	1,209	1,302	3,662	19.7
February	1,008	1,120	4,751	18.2	1,064	1,092	4,754	16.6
March	496	868	5,619	14.1	651	961	5,715	14.6
April	300	450	6,069	7.3	480	600	6,315	9.1
May	186	90	6,159	1.5	310	279	6,594	4.2
Total	5,716	(55 yrs.)	6,159	100.0	6,261	(24 yrs.)	6,594	100.0
Departure from normal	−443				−333			

Month	White Hall (Pop. 3,025)			
September	0	0	0	—
October	279	279	279	5.5
November	600	660	939	13.0
December	1,209	1,023	1,962	19.7
January	992	1,147	3,109	22.5
February	756	924	4,033	18.1
March	279	713	4,746	14.1
April	210	330	5,076	6.5
May	155	31	5,107	0.6
Total	4,480	(56 yrs.)	5,107	100.0
Departure from normal	−627			

[a] Compiled from U. S. Dept. Commerce, Weather Bureau, Climatological Data.
[b] Population from Sixteenth Census of the United States, 1940.
[c] Mean—Monthly totals for heating season; Av.—Monthly average over total period for which records have been kept.

Table 35.—Production of Fuel Briquets in the United States, 1944–1945

States	1944			1945			Change in 1945, percent	
	Plants	Net tons	Value	Plants	Net tons	Value	Tonnage	Value
Eastern states	5	625,779	$3,393,595	5	637,740	$ 3,606,372	+ 1.9	+ 6.3
Central states	22	1,704,005	13,680,036	24	1,991,733	16,739,912	+16.9	+22.4
Pacific Coast states	3	135,177	1,360,948	3	132,731	1,332,602	− 1.8	− 2.1
Total	[a]30	2,464,961	$18,434,579	32	2,762,204	$21,678,886	+12.1	+17.6

[a] 1944: 10 plants in Wisconsin; 3 in Missouri; 2 each in Illinois, Michigan, Pennsylvania and West Virginia; and 1 each in Arkansas, California, Massachusetts, Minnesota, Nebraska, North Dakota, Oregon, Washington, and Wyoming.
1945: 11 plants in Wisconsin; 3 each in Illinois and Missouri; 2 each in Michigan, Pennsylvania and West Virginia; and 1 each in Arkansas, California, Massachusetts, Minnesota, Nebraska, North Dakota, Oregon, Washington, and Wyoming.

Fuel Briquets and Packaged Fuel

The fuel briquetting industry exceeded the previous year's record by 12.1 percent in tonnage and 17.6 percent in value. The total output was 2,762,204 tons, of which 72 percent was produced in the Central States. This is shown in table 35.

The states in the Upper Mississippi Valley again increased their lead over the remainder of the country as consumers of fuel briquets. Major consumers in this area are Wisconsin, Minnesota, Missouri, North Dakota, South Dakota, and Illinois.

Briquets marketed in Wisconsin and Minnesota are manufactured mainly from low-volatile coal screenings obtainable on the lake docks and produced as a result of the double handling of coal from rail to lake and back to rail again at upper lake docks. In North Dakota and South Dakota, the market is supplied by briquets manufactured from the lignites of North Dakota.

Table 36 gives the shipments of fuel briquets of domestic manufacture into the Illinois coal market area in 1943, 1944, and 1945.

Table 36.—Shipments of Fuel Briquets of Domestic Manufacture into the Illinois Coal Market Area, 1943–1945
(In tons)

Destination	1943[a]	1944[b]	1945[b]
Illinois	85,174	90,358	92,143
Indiana	48,071	49,235	47,321
Iowa	61,150	90,379	150,815
Kansas	12,018	16,595	15,384
Kentucky	3,757	3,477	5,149
Minnesota	487,122	515,671	551,855
Missouri	202,562	254,360	276,471
Nebraska	38,693	44,900	54,225
North Dakota	94,172	125,331	145,401
South Dakota	84,585	118,811	139,399
Wisconsin	425,258	448,313	535,883
Total	1,542,562	1,757,430	2,014,046
Total—United States	1,970,143	2,278,480	2,585,091
Percent of U. S. total	78.2	77.2	77.8

[a] U. S. Bur. Mines, Mineral Market Report No. 1312, July 3, 1945.
[b] U. S. Bur. Mines, Mineral Market Report No. 1404, June 7, 1946.

Table 37.—Production and Value of Packaged Fuel in Illinois, 1940–1945[a]

Year	Amount tons	Value at plants		Number of plants
		Total	Average	
1940	3,813	$36,531	$ 9.60	6
1941	8,924	95,431	10.60	6
1942	4,980	60,001	12.05	6
1943[b]	3,081	38,445	12.48	4
1944[c]	1,837	23,037	12.55	4
1945[d]	16,690	186,593	11.18	6

[a] U. S. Bur. Mines Minerals Yearbooks.
[b] U. S. Bur. Mines Mineral Market Report No. 1175
[c] U. S. Bur. Mines Mineral Market Report No. 1312.
[d] U. S. Bur. Mines Mineral Market Report No. 1404; includes Illinois, Indiana, Iowa, and Nebraska. Bur. Mines not permitted to publish Illinois figures alone.

TABLE 38.—COKE AND BYPRODUCTS, PRODUCED, SOLD

	1942*		
	Quantity	Value at plants	
		Thousands of dollars	Av.
Coal used (M tons)	5,225	$27,594	$5.28
Coal per ton of coke (tons)	1.42		7.50
Coke produced (M tons)	3,690	27,364	7.42
Yield of coke (percent of coal used)	70.63		
Plants in operation	9		
Ovens in existence Dec. 31	915		
Capacity (M tons)	4,099		
New ovens	0		
Abandoned	0		
Under construction	124		
Source of coal used (M tons)			
Illinois	227		
Indiana	81		
Kentucky	1,523		
Pennsylvania	311		
West Virginia	3,200		
Other	13		
Total (M tons)	5,355		
Low volatile coal	1,905		
Medium volatile coal	976		
High volatile coal	2,474		
Coke sold or used by producer			
Used by producer in blast furnace	2,561	18,322	7.43
Sold for furnace use	152	1,210	8.03
Sold for foundry use	298	3,221	10.80
Sold for domestic use	585	3,964	6.78
Sold for industrial and other use	109	803	7.36
Coke breeze produced (M tons)	321	749	2.33
Coke oven byproducts			
Ammonia produced (sulfate equiv.)	95,466		
Per ton of coal coked	19.10		
Sulfate equivalent sold (M lbs.)	95,340	1,096	0.011
Coke oven gas produced (Millions cu. ft.)	50,672		
Used	15,507		
Sold	34,381	4,508	0.131
Light oil and derivatives sold (M gal.)	9,049	1,417	0.156
Tar produced (M gal.)	38,820		
Per ton of coal coked (gal.)	7.43		
Tar and derivatives sold (M gal.)	29,713	1,601	0.054
Total byproducts used or sold		$91,849	

* Revised figures.
[a] U. S. Bur. Mines Minerals Yearbooks and Mineral Market Report No. 1428, July 18, 1946.

OR USED BY PRODUCERS IN ILLINOIS, 1942–1945[a]

1943*			1944*			1945			Percent change in amount from 1944
Quantity	Value at plants		Quantity	Value at plants		Quantity	Value at plants		
	Thousands of dollars	Av.		Thousands of dollars	Av.		Thousands of dollars	Av.	
5,170	$29,059	$ 5.62	5,482	$33,110	$6.04	5,198	$32,034	$6.16	− 5.2
1.43		8.04	1.41		8.52	1.41		8.69	
3,625	29,379	8.10	3,879	34,074	8.78	3,682	32,378	8.79	− 5.1
70.15			70.75			70.83			
10			9			9			
963			992			882			
4,547			4,475			4,005			
49			75			0			
1			0			110			
75			0			0			
218			141			246			
69			16			51			
1,505			1,899			1,792			
457			515			438			
2,765			2,858			2,718			
0			0			0			
5,017			5,430			5,247			
1,419			1,766			1,737			
852			393			372			
2,746			3,270			3,138			
1,826	14,204	7.78	1,871	15,686	8.38	1,742	14,167	8.13	− 6.9
1,060	8,829	8.33	1,107	9,400	8.49	1,218	10,558	8.67	+10.0
318	[b]	[b]	285	3,461	12.14	314	3,815	12.10	+10.2
343	2,281	6.65	506	4,662	9.21	356	3,415	9.57	−29.6
112	[b]	—	106	852	8.05	84	731	8.70	−20.8
344	954	2.77	374	1,162	3.11	346	1,004	2.90	− 7.5
97,070			102,909			92,942			− 9.8
19.61			18.77			17.88			
97,836	983	0.010	100,728	1,217	0.012	97,612	1,199	0.012	− 3.1
49,870			54,864			50,638			− 7.7
14,233			17,351			15,555			−10.4
32,988	5,283	0.160	36,465	5,442	0.149	34,457	4,983	0.145	− 5.5
6,879	1,070	0.156	6,992	1,058	0.151	7,455	1,102	0.149	+ 6.6
39,435			38,099			35,547			− 6.7
7.63			6.95			6.84			
37,251	2,048	0.055	37,810	2,023	0.054	35,635	1,892	0.053	− 5.7
	$94,090			$112,147			$107,278		− 4.4[c]

[b] Not available.
[c] Percent change in value from 1944.

TABLE 39.—DISTRIBUTION OF COKE SHIPPED OR USED BY PRODUCER IN 1945[a]

PRODUCED IN ILLINOIS

Destination	Coke					Total breeze
	Furnace use	Foundry use	Other industrial use	Domestic use	Total coke	
California	—	7,899	136	—	8,035	—
Colorado	—	4,740	—	—	4,740	—
Illinois	2,846,707	141,242	167,933	316,893	3,472,775	318,702
Indiana	15,859	28,551	5,818	4,476	54,704	22,824
Iowa	—	14,170	2,076	970	17,216	485
Kansas	—	1,679	—	—	1,679	2,239
Michigan	—	20,927	2,986	7,495	31,408	—
Minnesota	—	13,051	—	—	13,051	43
Missouri	—	9,091	—	—	9,091	55
Montana	—	34	—	—	34	—
Nebraska	—	808	82	—	890	—
New York	—	104	—	—	104	—
Ohio	—	13,612	—	178	13,790	26,228
Oklahoma	—	35	—	—	35	41
Oregon	—	2,424	—	—	2,424	—
Pennsylvania	—	8,577	—	—	8,577	—
South Dakota	—	32	—	—	32	—
Texas	—	31	—	—	31	—
Utah	—	3,411	—	—	3,411	—
Washington	—	1,644	—	—	1,644	—
Wisconsin	—	41,688	2,328	26,361	70,377	5,325
Export	—	878	—	—	878	—
Total	2,862,566	314,628	181,359	356,373	3,714,926	375,942

PRODUCED IN INDIANA AND KENTUCKY

Destination	Coke					Total breeze
	Furnace use	Foundry use	Other industrial use	Domestic use	Total coke	
Alabama	—	—	—	—	—	5,084
California	—	13,360	—	—	13,360	—
Idaho	—	104	—	—	104	—
Illinois	1,486,746	73,747	8,225	39,079	1,607,797	83,455
Indiana	5,387,857	77,136	167,983	198,894	5,831,870	467,297
Iowa	—	26,423	3,271	6,508	36,202	13,874
Kansas	—	294	—	—	294	7,643
Kentucky	540,533	94	5,674	10,817	557,118	46,866
Michigan	—	56,838	3,342	94,860	155,040	2,854
Minnesota	—	5,977	100	38	6,115	—
Missouri	—	6,745	77	581	7,403	—
Montana	—	1,963	—	—	1,963	—
Nebraska	—	646	—	1	647	—
New York	—	—	—	—	—	2,085
Ohio	7,179	25,206	6,019	8,520	46,924	12,445
Oklahoma	—	408	—	—	408	15,980
Oregon	—	1,860	—	215	2,075	—
Pennsylvania	22,603	—	—	—	22,603	—
Tennessee	—	—	—	34	34	94
Texas	—	41	—	—	41	49
Virginia	7,682	—	22,813	1,641	32,136	—
Washington	—	1,286	—	—	1,286	—
West Virginia	—	—	33,530	30	33,560	—
Wisconsin	—	40,544	12,230	4,221	56,995	42,785
Export	—	4,427	30	20,081	24,538	985
Total	7,452,600	337,099	263,294	385,520	8,438,513	701,496

[a]U. S. Bur. Mines, Mineral Market Report, No. 1445, July 29, 1946.

PETROLEUM AND GAS

Petroleum in 1945 — The National Picture

Petroleum production in the United States in 1945 again exceeded all previous records. Demand for petroleum products in the closing phases of the war was exceedingly heavy and remained high after the cessation of hostilities. The industry produced 1,711,103,000 barrels.

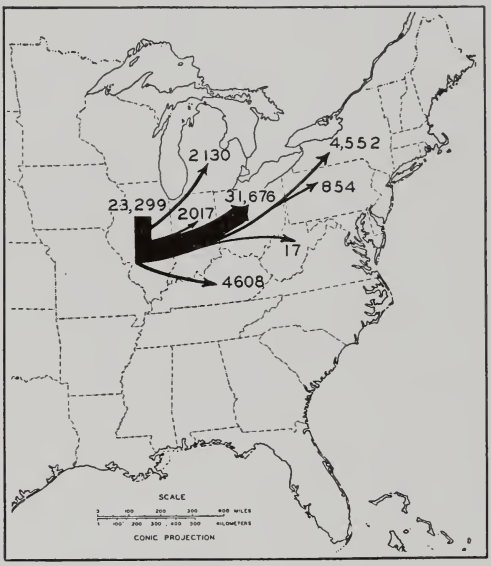

Fig. 10.—Distribution of crude oil produced in Illinois (in millions of barrels) by states, 1945.

Estimated Reserves

The national picture of petroleum reserves at the end of 1944 remained unchanged in the states that contribute to the Illinois refining industry. There were additions in Oklahoma, Illinois, Kentucky, and Michigan, but there were losses in Kansas and Arkansas. The estimated reserve as of January 1, 1946, and preceding years is shown in table 40.

These estimates, which are prepared each year by the American Petroleum Institute, are conservative. They include only oil reserves in proved fields on production and quantities recoverable with existing methods of production at existing prices. It is by no means an evaluation of undiscovered or untested reserves or of the oil ultimately recoverable in this area. The figure for each year represents the estimated reserves as of the given date after deducting the quantity withdrawn during the year and adding the current discoveries, extensions, and upward revisions for existing pools.

Production

The production of oil in the United States, by states, grouped according to producing districts, is given in table 41.

Table 40.—Estimates of Proved Oil Reserves in the States Serving the Illinois Area, Jan. 1, 1935–Jan. 1, 1946[a]
(Millions of barrels)

As of Jan. 1	Oklahoma	Kansas	Illinois	Arkansas	Kentucky	Indiana	Nebraska	Michigan
1946.....	890	542	350	304	57	41	1	64
1945.....	970	602	321	293	41	31	1	65
1944.....	909	646	295	297	35	31	1	55
1943.....	969	687	307	300	35	32	2	64
1942.....	1,036	690	334	295	36	23	—	56
1941.....	1,002	692	315	306	41	14	—	35
1940.....	1,063	726	382	320	44	14	—	51
1939.....	1,162	613	243	188	38	6	—	43
1938.....	1,212	601	41	192	38	3	—	49
1937.....	1,141	568	28	84	39	3	—	44
1936.....	—	—	—	—	—	—	—	—
1935.....	1,235	390	37	103	50	5	—	64

[a] From reports of Committee on Petroleum Reserves, American Petroleum Institute.

TABLE 41.—CRUDE OIL PRODUCTION IN THE UNITED STATES, BY DISTRICTS AND STATES, 1939–1945[a]
(In thousands of barrels)

Districts and States	1939		1940		1941		1942		1943		1944		1945	
	Quantity	Per-cent[b]	Quantity	Per-cent[b]	Quantity	Per-cent[b]	Quantity	Per-cent[b]	Quantity	Per-cent[b]	Quantity	Per-cent[b]	Quantity	Per-cent[b]
Midcontinent:														
Arkansas	21,238		25,775		26,327		26,628		27,600		29,418		28,613	
North Louisiana	25,403		24,406		24,991		29,310		27,398		24,012		23,589	
Kansas	60,703		66,139		83,242		97,636		106,178		98,762		95,997	
New Mexico	37,637		39,129		39,569		31,544		38,411		39,555		37,281	
Oklahoma	159,913		156,164		154,702		140,690		123,152		124,616		138,036	
Texas (except Gulf)	361,005		371,043		370,840		348,077		393,392		486,998		502,078	
Total	665,899	52.6	682,656	50.5	699,671	49.9	673,885	48.6	716,131	47.6	803,361	47.8	825,594	48.1
California:														
California	224,354	17.7	223,881	16.5	230,263	16.4	248,326	17.9	284,235	18.9	311,793	18.6	326,482	19.1
Gulf Coast:														
Louisiana Gulf	68,243		79,178		90,917		86,475		96,194		105,195		106,977	
Texas Gulf	122,523		122,166		134,732		135,020		200,128		261,124		253,455	
Mississippi	107		4,400		15,327		28,833		18,807		16,337		18,775	
Total	190,873	15.1	205,744	15.2	240,976	17.2	250,328	18.0	315,129	20.9	382,656	22.8	379,207	22.2
Rocky Mountain:														
Colorado	1,404		1,626		2,150		2,199		2,320		2,944		4,959	
Montana	5,960		6,728		7,526		8,074		7,916		8,627		8,397	
Wyoming	21,454		25,711		29,878		32,812		33,077		32,388		35,359	
Total	28,818	2.3	34,065	2.5	39,554	2.8	43,085	3.1	43,313	2.9	43,959	2.6	48,715	2.8
Central:														
Illinois	94,912		147,647		132,393		106,391		82,260		77,413		75,210	
Indiana	1,711		4,978		7,411		6,743		5,283		5,118		4,868	
Kentucky	5,621		5,188		4,762		4,534		7,883		9,621		10,325	
Ohio	3,156		3,159		3,510		3,543		3,322		2,937		2,828	
Michigan	23,462		19,753		16,359		21,754		20,768		18,490		17,259	
Total	128,862	10.2	180,725	13.3	164,435	11.8	142,965	10.4	119,516	10.4	113,579	6.6	110,490	6.4

Eastern:														
Pennsylvania	17,382		17,353		16,750		17,779		15,757		14,118		12,515	
New York	5,098		4,999		5,185		5,421		5,059		4,697		4,648	
West Virginia	3,580		3,444		3,433		3,574		3,349		3,070		2,879	
Total	26,060	2.1	25,796	2.0	25,368	1.8	26,774	1.9	24,165	1.7	21,885	1.3	20,042	1.1
Other: [c]	96	—	347	—	1,961	0.1	1,282	0.1	687	0.4	520	0.3	543	0.3
Total United States	1,264,962	100.0	1,353,214	100.0	1,402,228	100.0	1,386,645	100.0	1,503,176	100.0	1,677,753	100.0	1,711,103	100.0
Illinois	94,912	7.5	147,647	10.9	132,393	9.4	106,391	7.7	82,260	5.5	77,413	4.6	75,210	4.4

[a] U. S. Bur. Mines, Minerals Yearbooks and Monthly Petroleum Statement No. P 270, March 11, 1946.
[b] Percent of total U. S. production.
[c] The states reporting are not identical from year to year.
[d] Included in "Other."

TABLE 42.—CRUDE OIL AND RELATED PRODUCTS, PRODUCED, SOLD, OR USED BY PRODUCERS IN ILLINOIS, 1943–1945[a]

	1943			1944*			1945[b]			
	Production	Value at wells		Production	Value at wells		Production	Value at wells		Percent change in amount from 1944
		Total	Average		Total	Average		Total	Average	
Crude oil (barrels)	82,260,000	$112,700,000	$1.37	77,413,000	$107,500,000	$1.39	75,210,000	$104,451,900	$1.39	— .29
Natural gas (M cu. ft.)										
Marketed as gas	18,120,000	884,000	.049	17,000,000[b]	1,000,000[b]	.05	[c]	[c]		
Used in fields [c]	14,424,000	661,000	.046	13,600,000[b]	680,000[b]	.05	[c]	[c]		
Total	32,544,000	1,545,000	.047	30,600,000[b]	1,680,000[b]	.05	[c]	[c]		
Returned to underground formations (M cu. ft.)	5,866,000	—	—	940,000[b]	—	—	[c]	[c]	—	
Natural gasoline (gals.)	71,737,000	4,072,000	.057	61,351,000	3,870,000	.063	55,233,000	3,330,000	.061	—10.0
Liquefied petroleum gases, (butane, propane) (gals.)	113,750,000	3,358,000	.029	133,018,000	4,130,000	.031	120,683,000	3,980,000	.038	— 9.3
Total value		$121,675,000			$117,180,000			$111,761,900		— 4.7[d]

* Revised figures.
[a] U. S. Bureau of Mines.
[b] Subject to revision.
[c] Not available.
[d] Percent change in value from 1944.

Table 43.—Average Value of Crude Oil in Illinois, 1937–1945[a]
(Per barrel at wells)

1937	$1.33
1938	1.25
1939	1.07
1940	1.06
1941	1.30
1942	1.36
1943	1.37
1944	1.37
1945	1.37

[a] U. S. Bur. Mines, Minerals Yearbooks, and American Petroleum News, Dec. 26, 1945.

Prices of Crude Oil in 1945

Prices of crude petroleum are shown in table 44. In addition to the market prices, subsidies were paid to producers for wells in the stripper class as defined by O.P.A. regulations. No over-all data are available on the total sum paid to operators in Illinois.

Stocks

There was little change in stocks of crude oil in the United States and a slight increase in Illinois. Stocks of gasoline, both nationally and in Illinois, tended to increase somewhat, but stocks of distillate and fuel oil fell to critical levels. (See table 45.)

Gasoline

Gasoline consumption increased over 1944 but did not reach the levels of 1941 and 1942.

Table 44.—Crude Oil Price Changes for Illinois, Kentucky, Indiana and Ohio, 1944–1945[a]

	January 5, 1944	December 27, 1944	December 26, 1945
Posted by Sohio Corp., (May 21, 1941)			
Illinois basin,[b] including Griffin pool	$1.37	$1.37	$1.37
Carmi, Storms (Illinois) area	1.32	1.37[c]	1.37
Birk City (Kentucky) area	1.37	1.37	1.37
Corydon (Kentucky) area, Henderson	1.37	1.37	1.37
Posted by Ohio Oil Co., (May 21, 1941)			
Illinois basin	1.37	1.37	1.37
Eastern Illinois and Western Indiana	1.22	1.22	1.22
Posted by Carter Oil Co., (May 21, 1941)			
Louden, Fayette County, Illinois	1.37	1.37	1.37
Hitesville, Robards and St. Vincent pools, Kentucky, (July 1, 1944)		1.37	1.37
Posted by Mohawk Oil Lines, Inc., (May 21, 1941)			
Southern Illinois	1.37	1.37	1.37
Posted by Ashand Oil and Transportation Co., (June 19, 1941)			
Somerset Oil in Ashland Lines, Ky.			
Big Sandy River	1.38	1.38	1.43
Kentucky River	1.43	1.43	1.43
Posted by Owensboro-Ashland Co., (May 21, 1941)			
Owensboro (Kentucky) area	1.37	1.37	1.37
Posted by Sohio Corp., (Sept. 1, 1941)			
Lima, Ohio	1.50	1.50	1.50
Cleveland, Lodi & Chatham (Ohio) areas	1.30	1.30	1.30

[a] Nat'l. Petroleum News, January 5, 1944, December 27, 1944, and December 26, 1945.
[b] Also posted by the Texas Company.
[c] Posted Jan. 24, 1944.

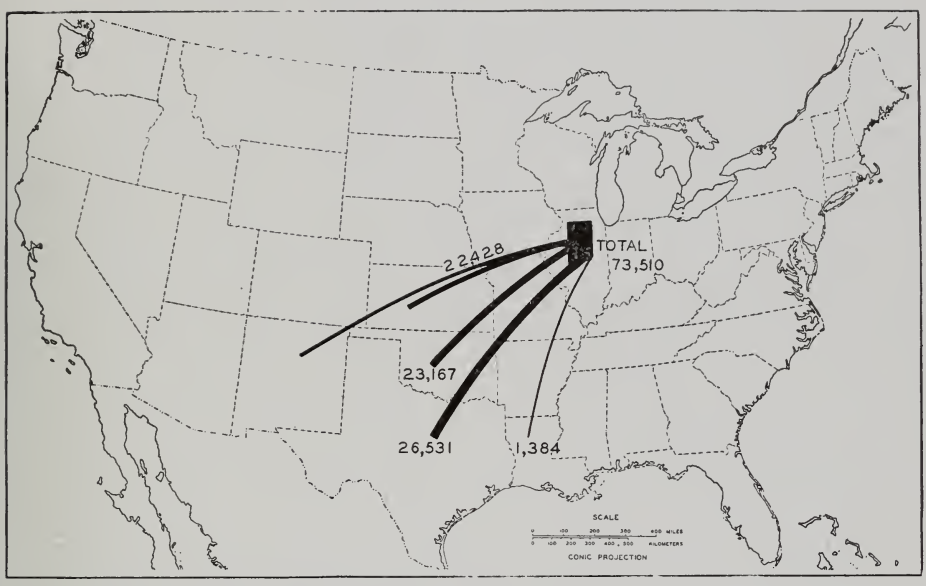

FIG. 11.—Sources of oil in Illinois refineries (thousands of barrels), 1945.

TABLE 45.—STOCKS OF CRUDE OIL AND REFINED PRODUCTS IN THE UNITED STATES, IN ILLINOIS, AND IN THE CENTRAL REFINING DISTRICT, BY MONTHS, 1945[a]
(In thousands of barrels)

1945	Total crude stocks		Stocks of refined products			
			Central refining district			United States
	United States	Illinois	Gasoline	Distillate fuel oil[b]	Residual fuel oil[b]	Gasoline
January 31	221,737	13,894	21,545	4,928	2,563	91,666
February 28	220,221	13,922	23,940	3,734	2,153	97,457
March 31	223,988	13,768	23,569	3,382	1,801	97,447
April 30	224,229	13,903	22,268	4,008	1,688	90,804
May 31	223,151	13,793	21,476	3,878	2,048	88,330
June 30	218,218	14,136	19,955	4,257	2,361	86,128
July 31	216,638	14,116	18,791	4,919	2,813	85,582
August 31	215,135	13,933	17,787	5,642	3,052	84,003
September 30	220,642	15,011	16,326	6,368	3,285	74,574
October 31	221,246	15,080	16,311	6,745	3,406	76,805
November 30	218,916	15,228	18,169	6,762	3,022	86,540
December 31	218,763	16,066	20,720	5,773	2,587	97,676

[a] U. S. Bur. Mines, Monthly Petroleum Statements.
[b] Includes refinery and bulk stocks.

GASEOUS FUELS IN ILLINOIS IN 1945

Gas, both natural and manufactured, constitutes an important fuel in certain Illinois industries and localities, particularly Chicago and its environs, as shown in table 47.

Natural gas is obtained from fields both within the State and by importation from three fields in the Midcontinent — the Hugoton field in Kansas, the Amarillo field in the Panhandle of Texas, and the Monroe field in northern Louisiana. The Hugoton gas field supplies cities in central Illinois. The City of Chicago and its environs is supplied by pipelines from the Amarillo field, and the St. Louis industrial district is supplied from Monroe, Louisiana. The above named fields supplying Illinois are primarily gas fields.

TABLE 46.—GASOLINE SOLD IN ILLINOIS, 1941–1945, BY MONTHS
(Thousands of gallons)

	1941[a]	1942[a]	1943[b]	1944[b]	1945[b]
January	111,386	116,305	75,700	84,769	83,261
February	105,883	96,237	74,851	80,818	76,261
March	127,451	114,387	92,646	93,186	100,746
April	140,940	131,138	101,313	87,619	98,375
May	162,605	138,072	98,034	121,048	115,713
June	148,451	132,000	119,149	119,005	114,060
July	155,021	131,683	110,791	97,928	114,127
August	155,969	127,469	101,957	97,616	116,588
September	145,618	125,830	95,369	99,257	118,034
October	143,406	125,274	100,486	102,465	115,822
November	134,510	139,732	100,494	94,873	114,817
December	135,538	63,479	93,793	87,741	105,424
Total	1,666,778	1,441,606	1,164,583	1,166,325	1,273,228

[a] Illinois Gasoline Tax Data: Illinois Gasoline Tax Evasion Committee, Monthly reports.
[b] American Petroleum Institute.

About 5 percent of the natural gas used in Illinois is obtained within the State. Most of this production is associated with the output of petroleum, although there are two small gas fields in Illinois which have also contributed to the supply.

Manufactured gas is obtained principally as a byproduct of the coking and blast furnace industry and petroleum refining, although a considerable portion is manufactured in gas producers for sale to the public.

The gas manufactured as a byproduct of the coking industry, blast furnace operations, and the refining of petroleum, is used primarily in plant operations, and only a small surplus is sold to the public through the utilities. For example, the low calorific gas resulting from blast furnace operations may be used as a fuel for operating the compressor engines or heating the stoves of a blast furnace plant. Surplus gas from a byproduct coking process may be used in the open-hearth furnace, in the soaking pits, or in several re-heat operations.

The principal outlet of manufactured gas is in manufacturing industries; the public utilities use natural gas or mixed gas in which natural gas is the more important ingredient.

The economics of gas distribution through public utilities in Illinois is of interest because the conditions of distribution and the rates are affected by the cost of transmission from distant fields and the seasonality of the domestic heating load.

Because of the long transmission distance, approximately 900 miles, and the high overhead cost involved, it is advantageous to maintain a full load in the line if a market can be found for surplus gas in off-peak periods. The seasonality of demand in the house-heating load is shown in table 49. This, together with gas for cooking and water heating, returns the highest gross revenue to the utilities. The transmission system, however, is maintained at full capacity by offering gas for industrial use at especially low rates but subject to a "cut-off" clause which permits the utility to shut off the supply to the industrial consumer on short notice in order to take care of sudden increases in the load among domestic users. Under these conditions, the utility can profitably dispose of surplus gas during off-peak periods at a price merely above the cost of the gas without charges to overhead, since the latter are unchanged by the full capacity operation of the pipe-line and have already

TABLE 47.—CONSUMPTION OF NATURAL GAS AND MANUFACTURED GAS IN ILLINOIS, 1943–1945[a]

	1943	1944	1945[b]
Total sales to ultimate consumers			
Number of customers	1,455,830	1,471,759	1,501,081
Therms used[c]	958,349,542	971,668,315	973,992,795
Revenue	$66,176,615	$67,665,782	$70,125,879
Revenue per therm, cents	6.95	6.89	7.22
Residential sales, exclusive of space heating			
Number of customers	1,319,122	1,335,074	1,351,111
Therms used	190,727,531	197,740,370	212,322,737
Revenue	$32,578,387	$33,447,945	$35,241,665
Revenue per therm, cents	17.08	16.92	16.60
Residential space heating sales			
Number of customers	59,829	59,561	67,556
Therms used	130,870,210	122,862,765	134,763,632
Revenue	$10,534,688	$9,949,049	$10,854,409
Revenue per therm, cents	8.05	8.10	7.90
Total commercial sales			
Number of customers	68,760	68,695	74,471
Therms used	86,423,136	88,322,730	91,280,301
Revenue	$7,573,681	$7,610,588	$8,113,239
Revenue per therm, cents	8.79	8.62	8.89
Industrial non-interruptible			
Number of customers	7,838	8,189	8,970
Therms used	139,818,748	163,969,928	161,163,054
Revenue	$7,645,316	$8,772,445	$8,711,629
Revenue per therm, cents	5.47	5.35	5.42
Industrial interruptible			
Number of customers	162	168	177
Therms used	409,670,604	408,035,182	374,463,091
Revenue	$7,775,390	$7,828,378	$7,204,937
Revenue per therm, cents	1.90	1.92	1.93
Public street and highway lighting			
Number of customers	3	3	
Therms used	461,591	476,600	
Revenue	$30,951	$31,942	[d]
Revenue per therm, cents	6.75	6.70	
Other sales to public authorities			
Number of customers	116	69	
Therms used	377,722	260,740	
Revenue	$38,202	$25,405	[d]
Revenue per therm, cents	10.11	9.77	

[a] Source: Illinois Commerce Commission.
[b] Preliminary—subject to revision.
[c] A therm is 100,000 B.t.u.'s.
[d] Not available.

been calculated in the rates charged for firm loads. The importance of the industrial interruptible sales from the point of view of quantity of gas delivered is shown in table 48.

The revenues for the several types of services are shown in table 49. The growth of the several classes of consumer demand over a period of several years is shown in table 50.

TABLE 48.—GAS SALES TO ULTIMATE CONSUMERS IN ILLINOIS, 1945, BY USES AND BY MONTHS[a]
(In thousands of therms)

Month	Residential sales exclusive of space heating	Residential space heating	Industrial interruptible sales	Commercial-industrial non-interruptible and other sales	Industrial non-interruptible sales	Total
January	18,573	24,365	24,468	9,661	14,085	91,152
February	17,893	21,438	23,535	8,913	13,477	85,256
March	17,391	16,632	33,209	7,772	14,502	89,506
April	17,068	9,635	31,321	6,562	15,998	80,584
May	17,605	10,160	29,780	8,419	16,782	82,746
June	18,417	6,711	34,079	7,184	16,003	82,394
July	17,514	3,003	37,045	7,027	15,294	79,883
August	16,328	2,110	38,215	6,209	14,032	76,894
September	16,819	2,531	34,268	6,505	10,886	71,009
October	17,822	6,489	32,903	7,635	11,401	76,250
November	17,731	11,251	31,869	6,420	9,498	76,769
December	19,161	20,439	23,771	8,977	9,203	81,551
Total	212,322	134,764	374,463	91,284	161,161	973,994

[a] Figures from Monthly Summary of Gas Sales in Illinois: Illinois Commerce Commission, Research and Statistics, Engineering Division.

TABLE 49.—VALUE OF GAS SALES TO ULTIMATE CONSUMERS IN ILLINOIS, 1945, BY USES AND BY MONTHS[a]
(In thousands of dollars)

Month	Residential sales exclusive of space heating	Residential space heating	Industrial interruptible sales	Commercial and other sales	Industrial non-interruptible sales	Total
January	$ 3,020	$ 1,793	$ 500	$ 887	$ 826	$ 7,026
February	2,930	1,591	485	831	798	6,635
March	2,850	1,269	642	750	825	6,336
April	2,846	801	610	631	831	5,719
May	2,918	839	580	672	838	5,847
June	3,038	600	649	613	795	5,695
July	2,938	330	679	554	759	5,260
August	2,794	263	690	510	699	4,956
September	2,868	298	643	527	566	4,902
October	2,983	597	628	617	607	5,432
November	2,952	927	618	669	571	5,737
December	3,105	1,546	480	852	598	6,581
Total	$35,242	$10,854	$7,204	$8,113	$8,713	$70,126

[a] Figures from Monthly Summary of Gas Sales in Illinois: Illinois Commerce Commission, Research and Statistics, Engineering Division.

TABLE 50.—GAS SALES TO ULTIMATE CONSUMERS IN ILLINOIS, BY PRINCIPAL USES, 1941–1945[a]
(In thousands of therms)

Uses	1941	1942	1943	1944	1945[b]
Residential sales exclusive of space heating	176,357	182,250	190,728	197,740	212,323
Residential space heating sales	105,520	124,068	130,870	122,863	134,764
Commercial sales	76,679	85,137	86,423	88,323	91,280
Industrial non-interruptible	95,180	109,234	139,819	163,960	161,163
Industrial interruptible	378,658	449,508	409,671	408,035	374,463
Public agencies	954	1,137	839	737	[c]
Total	833,348	951,334	958,350	981,668	973,993

[a] Illinois Commerce Commission.
[b] Preliminary, subject to revision.
[c] Not available at this time.

STONE, ROCK PRODUCTS

Limestone, Dolomite, and Marl

The amount of limestone, dolomite, and marl, which was sold or used by producers in Illinois in 1945 was 10,916,000 tons, valued at the plants at $11,136,000. This was an increase of about 2 percent in amount from that of the previous year. Details by kind and by use are given in tables 51 and 52, and are shown graphically in figure 12.

Producers' reports indicate general increase in demand, especially for agstone, chemical, and other industrial uses, and for riprap and rough construction stone. This increase in demand found the stone industry

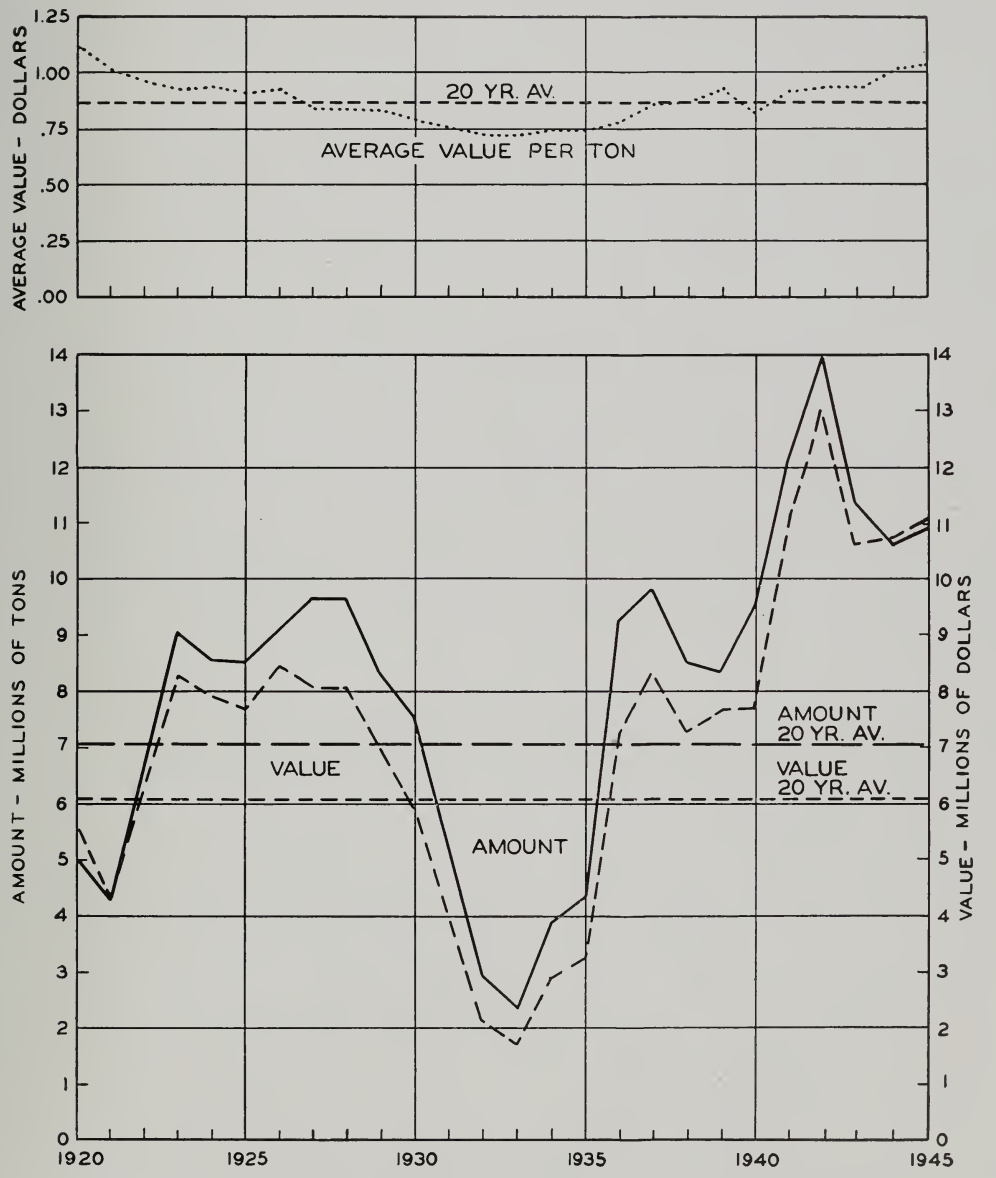

Fig. 12.—Annual production of stone (limestone, dolomite, marl) in Illinois, 1920–1945.

TABLE 51.—LIMESTONE, DOLOMITE, AND MARL, BY USES,

Line No.	Use	Type of Operation	1943*			
			Plants[b]	Amount tons	Value at plants	
					Total	Av.
	Industrial					
1	Agstone	Commercial...	91	3,106,159	$3,052,990	$0.98
2	Agstone	Non-comm....	5	39,771	32,695	.82
3	Metallurgical and flux[c]	Commercial...	10	868,798	854,034	.98
4	Chemical uses[d]	" ...	2	119,244	216,108	1.81
5	Limestone whiting[e]	" ...	2	9,202	52,695	5.73
6	Miscellaneous filler[f]	" ...	6	105,878	345,310	3.26
7	Other industrial uses[g]	" ...	5	26,267	115,349	4.39
8	Total industrial uses	Both.....	96	4,275,319	4,669,181	1.09
	Construction					
9	Concrete and paving	Commercial...	55	6,076,263	5,059,702	.83
10	Concrete and paving	Non-comm....	15	134,228	127,931	.95
11	Railroad ballast	Commercial...	16	723,281	547,928	.76
12	Riprap	" ...	17	96,665	112,357	1.16
13	Riprap	Non-comm....	1	3,580	9,168	2.56
14	Rough construction and rubble	Commercial...	5	1,783	2,386	1.34
15	Rough construction and rubble	Non-comm....	2	1,966	1,270	.65
16	Flagging	Commercial...	3	479	2,380	4.97
17	Other construction uses[h]	" ...	3	115,538	121,845	1.05
18	Total construction uses	Both.....	78	7,153,783	5,984,967	.84
19	Total operations	Commercial...	101	11,249,557	10,483,084	.93
20	Total operations	Non-comm....	16	179,545	171,064	.95
21	Total stone	Both.....	117	11,429,102	$10,654,148	$0.93

* Revised figures.
[a] Compiled from joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.
[b] Number of plants reporting production.
[c] Includes stone for aluminum refining, refractory dolomite, and flux for open hearth and blast furnaces.
[d] Includes stone for glass factories, magnesium metal (1943), and tanning.

in Illinois facing many serious difficulties. Throughout the year labor available was scarce and inexperienced, and it was almost impossible to obtain repairs for badly worn machinery, trucks, and other equipment. These conditions curtailed production and many smaller plants were idle.

COMMERCIAL AND NON-COMMERCIAL OPERATIONS

Commercial operations are shown separately from non-commercial operations, which include the following: State of Illinois, counties, townships, municipalities, and other government agencies. Purchases by government agencies from commercial producers are included in commercial operations. Non-commercial operations in 1945 produced only 1 percent of the total tonnage of stone in Illinois.

AGSTONE USED IN ILLINOIS IN 1945

Reports of producers to the Illinois State Geological Survey show that the amount of agstone (ground limestone, dolomite, and marl) used for soil improvement in Illinois during 1945 amounted to more than 4,220,000 tons. This was about 10,000 tons more than that used in 1944 and establishes again a new all-time high record. Illinois continues to rank first among all the states in amount of liming materials used for soil treatment.

Sold or Used by Producers in Illinois, 1943–1945[a]

1944*				1945					
Plants[b]	Amount tons	Value at plants		Plants[b]	Amount tons	Value at plants		Percent change in amount from 1944	Line No.
		Total	Av.			Total	Av.		
117	4,037,062	$4,236,418	$1.05	124	4,233,920	$4,582,447	$1.08	+ 3.9	1
4	35,987	30,289	.84	—	—	—	—	—	2
6	940,062	940,414	1.00	5	801,176	810,277	1.01	− 14.8	3
2	58,390	79,537	1.36	2	64,247	73,395	1.14	+ 10.0	4
3	10,924	39,537	3.62	2	9,065	35,404	3.91	− 17.0	5
5	145,997	425,924	2.92	7	136,061	460,496	3.38	− 6.8	6
5	40,912	106,147	2.59	6	79,274	251,293	3.17	+ 93.8	7
121	5,269,334	5,858,266	1.11	125	5,323,743	6,213,312	1.17	+ 1.0	8
65	4,042,304	3,715,703	.91	61	3,927,890	3,576,146	.91	− 2.8	9
9	125,358	108,938	.87	5	90,102	83,771	.93	− 28.1	10
15	1,016,511	775,677	.76	15	1,080,162	837,680	.78	+ 6.3	11
20	56,758	69,938	1.23	14	248,795	165,821	.67	+ 338.3	12
3	8,065	13,744	1.70	—	—	—	—	—	13
7	4,627	5,125	1.11	5	60,605	77,995	1.29	+1209.8	14
1	50	25	.50	—	—	—	—	—	15
5	6,595	8,431	1.28	5	511	1,643	3.21	− 92.3	16
8	138,526	133,630	.96	5	184,128	180,112	.98	+ 32.9	17
83	5,398,794	4,831,211	.89	71	5,592,193	4,923,168	.88	+ 3.6	18
125	10,498,668	10,536,481	1.00	129	10,825,834	11,052,709	1.02	+ 3.1	19
13	169,460	152,996	.90	5	90,102	83,771	.93	− 49.7	20
138	10,668,128	$10,689,477	$ 1.00	134	10,915,936	$11,136,480	$1.02	+ 2.3	21

[e] Includes limestone whiting for kalsomine, pottery, tooth paste, and for paint, putty, rubber, and other fillers.
[f] Includes pulverized stone for asphalt, explosives, fertilizer, grease, insecticides and other fillers.
[g] Includes stone for mineral food, poultry grit, regrinding, reprocessing, and dust for coal mines.
[h] Includes stone for farm use, filling, filter beds, stone sand, and unspecified uses.

The value of agstone for improving soil fertility is so firmly established that the demand for this product has caused the Illinois stone industry to make an enormous tonnage of this material. The amount of Illinois production marketed in other states increased 9 percent, at the same time that the amount produced in other states and used in Illinois decreased 42 percent (table 53). The total amount of agstone used in Illinois increased 2 percent from the previous year.

The progressive increase in the use of agstone on Illinois farms during the years for which figures are available is shown in table 54. During the ten-year period from 1927 to 1936, the amount used annually increased 72 percent; and during the nine-year period from 1937 to 1945, the increase was 380 percent. This remarkable growth is shown graphically in figure 13.

During 1945, agstone was produced in 44 of the 102 counties of the State. Of the total amount used during the year, 95.7 percent was produced in Illinois.

Table 55 gives the use of agstone by counties in Illinois during 1945, showing the amounts produced in Illinois and in other states. It also shows the arable land and plowable pasture in each county and the average quantity of agstone used, in pounds per acre of such land. These data are from producers who reported sales of agstone in specific counties, or are estimates by county

TABLE 52.—LIMESTONE, DOLOMITE, AND MARL, BY KINDS AND BY USES, SOLD OR USED BY PRODUCERS, IN ILLINOIS, 1945[a]

Use	Type of Operation	Limestone[n]				Dolomite			
		Plants[b]	Amount tons	Value at plants		Plants[b]	Amount tons	Value at plants	
				Total	Av.			Total	Av.
Industrial									
Agstone	Commercial	60	2,310,972	$2,622,193	$1.13	61	1,915,421	$1,952,790	$1.02
Agstone-marl	"	3	7,527	7,464	.99	—	—	—	—
Metallurgical and flux	"	2	[c] 249,321	[c] 258,422	1.04	3	[d] 551,855	[d] 551,855	1.00
Chemical uses	"	2	[e] 64,247	[e] 73,395	1.14	—	—	—	—
Limestone whiting	"	2	[f] 9,065	[f] 35,404	3.91	—	—	—	—
Miscellaneous filler	"	4	[g] 46,482	[g] 165,626	3.56	3	[h] 89,579	[h] 294,870	3.30
Other industrial uses	"	4	[i] 58,726	[i] 232,155	3.95	2	[j] 20,548	[j] 19,138	.93
Total industrial uses	Commercial	63	[n]2,746,340	[n]3,394,659	1.24	62	2,577,403	2,818,653	1.10
Construction									
Concrete and paving	Commercial	36	1,506,202	1,505,583	1.00	25	2,421,688	2,070,563	.85
Concrete and paving	Non-comm.	1	2,000	1,600	.80	4	88,102	82,171	.93
Railroad ballast	Commercial	5	296,423	263,538	.89	10	783,739	574,142	.73
Riprap	"	10	52,376	64,583	1.23	4	196,419	101,238	.52
Rough construction and rubble	"	4	60,305	77,680	1.29	—	[k]	[k]	—
Flagging	"	3	40	179	4.47	3	771	1,779	2.31
Other construction uses	"	3	[l] 155,138	[l] 151,138	.97	2	[m] 28,990	[m] 28,974	1.00
Total construction uses	Both	39	2,072,484	2,064,301	1.00	32	3,519,709	2,858,867	.81
Total operations	Commercial	64	[n]4,816,824	[n]5,457,360	1.13	65	6,009,010	5,595,349	.93
Total operations	Non-comm.	1	2,000	1,600	.80	4	88,102	82,171	.93
Total stone	Both	65	[n]4,818,824	[n]$5,458,960	$1.13	69	6,097,112	$5,677,520	$0.93

[a] Compiled from joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.
[b] Number of plants reporting production.
[c] Includes stone for aluminum refining and flux for blast furnaces.
[d] Includes refractory dolomite for open-hearth and flux for blast furnaces.
[e] Includes stone for glass factories and tanning.
[f] Includes limestone whiting for kalsomine, pottery, tooth paste, and for paint, putty, rubber, and other fillers.
[g] Includes pulverized stone for asphalt, explosives, fertilizer, grease, insecticides, and other fillers.
[h] Includes pulverized stone for asphalt and fertilizer.
[i] Includes stone for mineral food, poultry grit, and dust for coal mines.
[j] Includes stone for regrinding, and dust for coal mines.
[k] Included in flagging.
[l] Includes stone for farm use, and unspecified uses.
[m] Includes stone for filling and filter beds, and stone sand.
[n] Includes a small amount of marl, see Agstone-marl.

TABLE 53.—AGSTONE USED IN ILLINOIS, 1944 AND 1945[a]

	1944				1945				
	Plants[b]	Amount tons	Value at plants		Plants[b]	Amount tons	Value at plants		Percent change in amount from 1944
			Total	Av.			Total	Av.	
Produced in Illinois:									
Limestone	66	2,500,261	$2,709,514	$1.08	60	2,310,972	$2,622,193	$1.13	− 7.6
Dolomite	53	1,561,956	1,546,597	.99	61	1,915,421	1,952,790	1.02	+22.6
Marl	2	10,832	10,596	.98	3	7,527	7,464	.99	−30.5
Total produced in Illinois	121	4,073,049	4,266,707	1.05	124	4,233,920	4,582,447	1.08	+ 3.9
Less marketed in other states	10	173,211	181,500	1.05	11	190,280	197,580	1.04	+ 9.3
Produced and used in Illinois	121	3,899,838	4,085,207	1.05	124	4,043,640	4,384,867	1.08	+ 3.7
Produced in other states and used in Illinois	8	314,762	303,679	.96	11	181,260	168,452	.93	−42.4
Total agstone used in Illinois	129	4,214,600	$4,388,886	$1.04	135	4,224,900	$4,553,319	$1.08	+ 2.4

[a] From canvass made by Illinois Geological Survey, in cooperation with Illinois Agricultural Association and Midwest Agricultural Limestone Institute.
[b] Number of plants reporting production.

TABLE 54.—AGSTONE USED IN ILLINOIS ANNUALLY, 1927–1945[a]

Year	Tons	Value	Av.	Year	Tons	Value	Av.
1927	647,155	$ 579,639	$0.90	1937	1,310,513	$1,279,981	$0.97
1928	565,001	511,005	.91	1938	1,251,263	1,247,150	1.00
1929	947,798	843,693	.89	1939	1,497,458	1,318,173	.88
1930	868,426	740,785	.86	1940	2,365,663	1,999,850	.84
1931	268,874	241,376	.90	1941	3,084,855	2,873,536	.93
1932	164,933	140,969	.86	1942	3,866,568	3,600,313	.93
1933	227,466	165,667	.73	1943	3,236,477	3,175,108	.98
1934	491,644	319,604	.65	1944	4,214,600	4,388,886	1.04
1935	379,555	268,139	.71	1945	4,224,900	4,553,319	1.08
1936	1,114,466	871,862	.78				

[a] U. S. Bureau of Mines, 1927-29; canvass by Illinois Agricultural Association, 1930; canvass by Illinois Geological Survey, 1931-45.

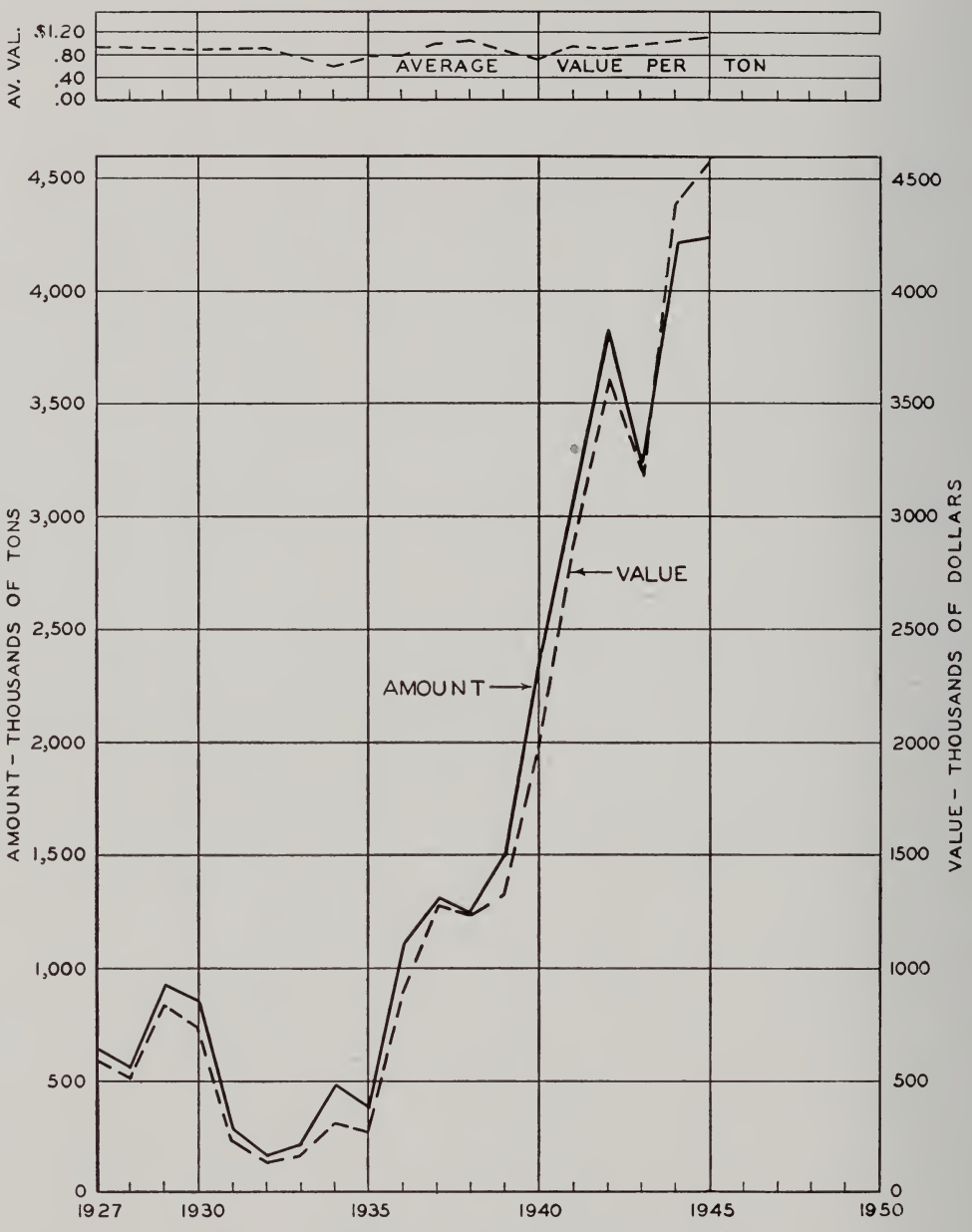

Fig. 13.—Annual use of agstone in Illinois, 1927–1945.

TABLE 55.—AGSTONE USED IN ILLINOIS, BY COUNTIES, 1944 AND 1945[a]

County	Total used in 1944 (tons)	Tons used in 1945			Acres of arable land and plowable pasture (1940 census)	Average No. Pounds per acre[b]	
		Produced in Illinois	Produced in other states	Total used in Illinois		1944	1945
Adams	49,000	50,000	—	50,000	328,009	299	305
Alexander	9,200	3,200	—	3,200	58,779	313	108
Bond	40,000	33,800	1,200	35,000	168,876	474	414
Boone	15,700	16,900	—	16,900	139,691	225	241
Brown	10,000	12,000	—	12,000	119,648	168	200
Bureau	101,300	100,000	—	100,000	440,808	460	454
Calhoun	16,000	18,000	—	18,000	70,886	456	507
Carroll	33,000	36,000	—	36,000	200,264	330	360
Cass	25,000	30,000	—	30,000	157,002	319	382
Champaign	30,000	80,000	—	80,000	560,583	107	285
Christian	51,700	75,000	—	75,000	373,342	277	402
Clark	40,300	58,500	—	58,500	217,376	372	539
Clay	30,100	21,600	3,000	24,600	201,735	299	243
Clinton	37,000	35,200	2,200	37,400	210,349	352	356
Coles	30,000	40,000	—	40,000	254,255	236	315
Cook	46,400	21,400	3,600	25,000	199,206	466	251
Crawford	30,000	30,000	—	30,000	193,868	310	309
Cumberland	30,000	25,000	—	25,000	157,832	373	316
DeKalb	50,000	75,000	—	75,000	349,131	286	429
De Witt	4,500	13,200	—	13,200	211,909	43	124
Douglas	4,000	20,000	—	20,000	231,817	35	172
DuPage	26,100	46,600	—	46,600	116,731	450	796
Edgar	30,000	30,000	—	30,000	307,538	195	195
Edwards	16,900	11,300	2,100	13,400	108,888	310	247
Effingham	39,500	37,700	300	38,000	213,369	371	309
Fayette	20,500	27,000	200	27,200	275,732	149	109
Ford	20,000	22,000	3,000	25,000	280,058	143	178
Franklin	17,200	24,800	4,300	29,100	146,843	235	395
Fulton	11,000	39,000	1,000	40,000	338,466	65	236
Gallatin	30,000	20,000	—	20,000	127,951	470	312
Greene	17,700	17,700	—	17,700	226,052	157	157
Grundy	18,000	20,000	—	20,000	218,241	165	183
Hamilton	15,700	10,400	4,300	14,700	179,698	175	135
Hancock	47,000	21,400	400	21,800	340,637	276	128
Hardin	31,300	13,600	—	13,600	50,649	1,240	533
Henderson	55,400	41,400	—	41,400	156,071	716	531
Henry	90,000	85,200	4,800	90,000	423,236	425	425
Iroquois	60,000	64,500	500	65,000	611,482	197	213
Jackson	21,100	16,100	200	16,300	188,088	224	173
Jasper	50,300	37,800	—	37,800	240,290	420	315
Jefferson	72,000	28,100	17,900	46,000	242,802	593	379
Jersey	17,500	35,000	—	35,000	134,766	260	518
Jo Daviess	30,000	24,500	500	25,000	225,208	267	223
Johnson	9,000	14,000	—	14,000	112,452	161	250
Kane	71,000	60,100	—	60,100	255,882	556	469
Kankakee	64,000	77,000	—	77,000	348,647	367	441
Kendall	30,000	25,000	—	25,000	168,326	357	298
Knox	57,200	52,800	12,700	65,500	317,827	359	412
Lake	9,600	12,000	—	12,000	140,960	128	170
LaSalle	125,000	128,000	—	128,000	585,735	426	437
Lawrence	15,600	9,500	1,000	10,500	165,983	188	126
Lee	125,000	130,700	—	130,700	385,196	648	680
Livingston	87,700	196,900	—	196,900	595,765	294	661
Logan	79,700	46,300	—	46,300	346,615	459	267
McDonough	30,000	25,000	—	25,000	270,917	222	185

TABLE 55.—(Concluded)

County	Total used in 1944 (tons)	Tons used in 1945			Acres of arable land and plowable pasture (1940 census)	Average No. Pounds per acre[b]	
		Produced in Illinois	Produced in other states	Total used in Illinois		1944	1945
McHenry	40,200	39,900	—	39,900	262,434	306	305
McLean	75,000	110,000	—	110,000	656,782	228	335
Macon	33,800	26,900	100	27,000	305,531	222	176
Macoupin	16,800	28,600	1,000	29,600	342,781	98	172
Madison	40,000	36,300	2,700	39,000	307,651	261	253
Marion	37,600	25,000	11,900	36,900	239,131	314	309
Marshall	10,600	36,700	—	36,700	189,489	112	384
Mason	33,000	38,800	—	38,800	248,797	266	312
Massac	11,000	12,100	—	12,100	89,357	247	272
Menard	21,400	20,000	—	20,000	154,392	278	259
Mercer	20,000	19,400	600	20,000	251,449	159	159
Monroe	39,400	40,000	—	40,000	155,971	506	513
Montgomery	36,700	70,300	400	70,700	322,306	228	437
Morgan	20,000	35,200	—	35,200	261,346	156	266
Moultrie	16,800	24,000	—	24,000	178,794	188	268
Ogle	60,000	73,700	—	73,700	383,404	314	385
Peoria	75,000	74,500	500	75,000	243,380	616	616
Perry	16,800	14,200	8,700	22,900	156,265	215	293
Piatt	20,000	45,000	—	45,000	246,223	163	366
Pike	40,000	40,000	—	40,000	341,756	235	235
Pope	6,500	5,000	—	5,000	92,321	141	108
Pulaski	12,500	5,100	—	5,100	68,920	363	148
Putnam	11,800	20,100	—	20,100	66,867	354	600
Randolph	50,000	50,700	4,300	55,000	227,475	440	484
Richland	24,400	17,500	2,500	20,000	186,383	262	215
Rock Island	75,000	39,500	500	40,000	156,111	960	512
St. Clair	78,400	74,900	100	75,000	258,552	582	579
Saline	23,700	17,000	2,300	19,300	145,818	326	264
Sangamon	60,500	64,900	100	65,000	425,644	284	305
Schuyler	2,500	7,300	100	7,400	144,306	35	103
Scott	15,000	21,000	—	21,000	103,624	290	404
Shelby	36,500	46,000	100	46,100	374,712	196	246
Stark	12,800	26,000	2,900	28,900	148,213	173	391
Stephenson	50,000	75,400	—	75,400	283,408	353	533
Tazewell	30,000	40,000	—	40,000	304,959	197	262
Union	24,700	20,800	—	20,800	123,799	399	335
Vermilion	50,000	70,000	—	70,000	451,146	222	310
Wabash	10,000	4,800	11,800	16,600	103,459	193	322
Warren	75,000	60,000	—	60,000	271,171	553	442
Washington	55,000	4,400	15,800	20,200	242,105	455	166
Wayne	60,000	14,200	30,100	44,300	330,724	363	267
White	55,400	37,400	17,600	55,000	240,726	460	458
Whiteside	85,000	100,000	—	100,000	350,544	484	569
Will	39,100	47,500	—	47,500	396,213	197	239
Williamson	25,000	15,300	—	15,300	128,514	389	237
Winnebago	25,000	30,000	—	30,000	219,494	228	274
Woodford	21,200	29,400	—	29,400	258,560	164	227
County not specified	411,300	42,640	3,960	46,600	—	—	—
Total	4,214,600	4,043,640	181,260	4,224,900	25,133,474	336 Av.	336 Av.

[a] Compiled from canvass made by Illinois Geological Survey, in cooperation with Illinois Agricultural Association and Midwest Agricultural Limestone Institute.
[b] Calculated from columns 5 and 6.

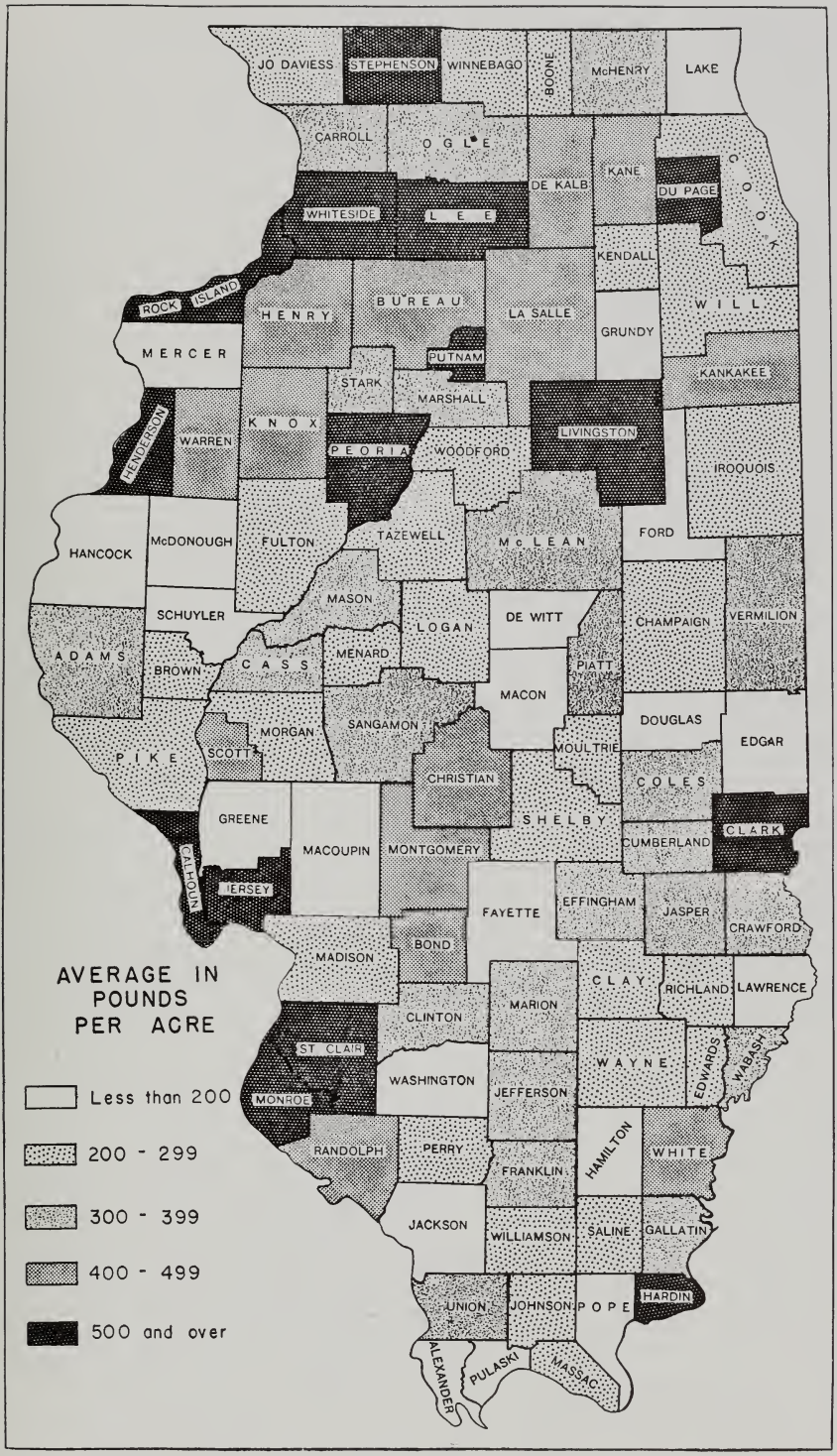

FIG. 14.—Agstone used in Illinois in 1945, showing county averages in pounds per acre of arable land and plowable pasture.

TABLE 56.—AGSTONE PRODUCED IN OTHER STATES AND USED IN ILLINOIS, 1940–1945[a]
(In tons)

Year	Tons sold in Illinois	Percent of total Illinois consumption
1940	106,912	5.9
1941	95,226	3.2
1942	171,035	4.5
1943	166,518	5.3
1944	314,800	7.5
1945	181,200	4.3

[a] From canvass made by Illinois Geological Survey.

farm advisers, whichever is the larger. Production not accounted for in the county totals is given at the bottom of the table marked "counties not specified." The total amount used in Illinois is the actual total of deliveries in Illinois reported by producers.

Table 56 gives the total amount of agstone produced in other states but marketed in Illinois. Table 57 gives the total amount produced in Illinois which was marketed in other states.

The map (fig. 14) shows the average amount of agstone used in each county in pounds per acre of arable land and plowable pasture. In previous reports the averages have been based on acres of arable land, but in this report plowable pasture land is also included in order to give a broader basis of comparative use for agstone in the various counties.

CEMENT

Sales of cement by producers in Illinois during 1945 amounted to 4,510,000 barrels, valued at the plants at $7,655,000. This was an increase of 25 percent from the previous year, and brings the cement industry to slightly above the level of 1943, as shown in figure 15. The largest percentage increases were in masonry or mortar cements, and in high-early-strength cement, as shown in table 58.

LIME

Sales of lime by producers in Illinois in 1945 amounted to 287,600 tons, valued at the plants at $2,229,000, as shown in table 59. This total is approximately equal to that for the previous year. Quicklime sales were greater for chemical and industrial uses and less for building uses than in 1944. Hydrated lime demand was greater for water treatment. Trends in the sale of lime for the past 25 years are shown graphically in figure 15.

MINERAL WOOL

Canvass of the sales of mineral wool has been transferred by the Federal Government from the U. S. Bureau of Mines to the U. S. Bureau of the Census. Sales of this mineral product for 1945 are not available. Totals for previous years are given in table 1, and in previous annual reports on "Illinois Mineral Industry."

TABLE 57.—AGSTONE PRODUCED IN ILLINOIS AND MARKETED IN OTHER STATES, 1940–1945[a]
(In tons)

Year	Wisconsin	Iowa	Missouri	Kentucky	Indiana	Other states[b]	Total
1940	950	—	353	5,450	3,800	15,225	25,778
1941	—	100	867	940	1,800	1,125	4,832
1942	450	—	203	9,700	28,811	19,853	59,017
1943	—	11,000	1,192	1,000	34,579	28,200	75,971
1944	—	7,683	8	8,900	46,302	110,318	173,211
1945	—	—	2,700	23,600	46,000	117,900	190,200

[a] From canvass made by Illinois Geological Survey.
[b] Marketed outside Illinois, destination seldom specified.

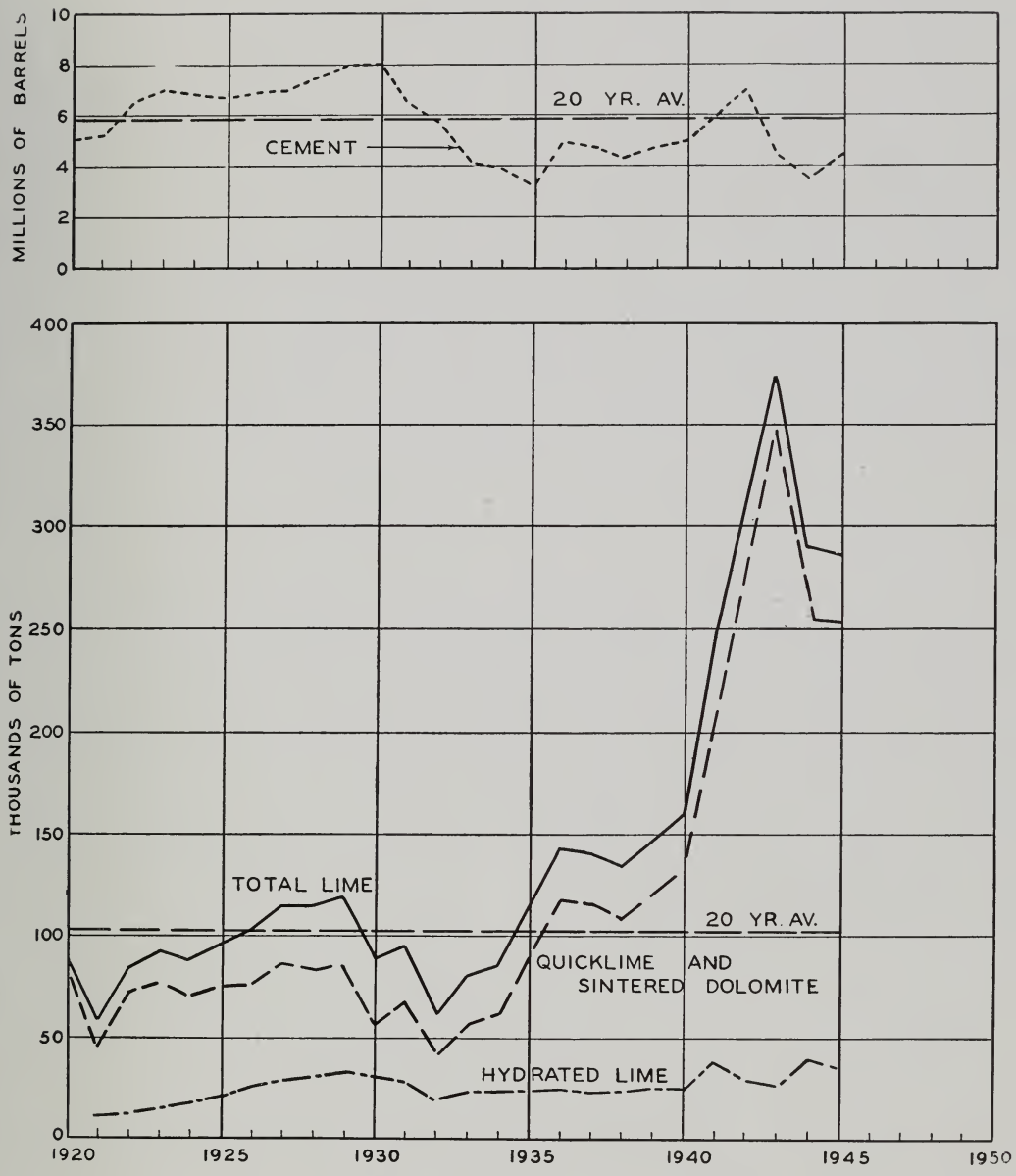

Fig. 15.—Annual shipments of cement and lime by producers in Illinois, 1920–1945.

TABLE 58.—CEMENT SOLD OR USED BY

Line No.	Kind	1943*			
		Plants[b]	Amount bbls.[c]	Value at plants	
				Total	Av.
	Standard Portland cement:				
1	General use and moderate heat	4	3,925,910	$5,888,562	$1.50
	Special Portland cements:				
2	High-early-strength	3	[d] 381,368	[d] 769,327	2.02
3	Other special Portlands	—	—	—	—
4	Total Portland cement	4	4,307,278	6,657,889	1.55
5	Less cement used in manufacture of masonry or mortar cements	4	83,000	128,600	1.55
6		4	4,224,278	6,529,289	1.55
7	Masonry or mortar cements	4	280,164	436,318	1.56
8	Total cement	4	4,504,442	$6,965,607	$1.55

* Revised figures.
[a] Compiled from canvass made by U. S. Bureau of Mines.
[b] Number of plants reporting production.
[c] Weight per bbl. 376 lbs.

TABLE 59.—LIME SOLD OR USED BY

Line No.	Kind and Use	1943*			
		Plants[b]	Amount tons	Value at plants	
				Total	Av.
	Quicklime and sintered dolomite				
1	Building lime	4	4,828	$ 53,971	$11.18
2	Sintered dolomite and metallurgical lime	5	232,445	1,789,462	7.70
3	Paper manufacturing	3	8,188	53,394	6.52
4	Water and sewage treatment	2	[c]	[c]	—
5	Other chemical and industrial uses	4	37,823	250,261	6.62
6	Total	8	283,284	2,147,088	7.58
	Hydrated lime				
7	Building lime	4	2,261	24,618	10.89
8	Water treatment	2	[d]	[d]	—
9	Other chemical and industrial uses	3	29,190	214,834	7.36
10	Total	4	31,451	239,452	7.61
11	Total lime	8	314,735	$2,386,540	$7.58

* Revised figures.
[a] Compiled from joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.
[b] Number of plants reporting production.

PRODUERS IN ILLINOIS, 1943–1945[a]

1944*				1945					Line No.
Plants[b]	Amount bbls.[c]	Value at plants		Plants[b]	Amount bbls.[c]	Value at plants		Percent change in amount from 1944	
		Total	Av.			Total	Av.		
4	3,215,801	$4,940,709	$1.54	4	3,753,362	$6,259,802	$1.67	+ 16.7	1
3	180,713	346,590	1.92	4	269,194	547,558	2.03	+ 48.9	2
2	[e] 23,301	[e] 38,497	1.65	3	[f] 166,893	[f] 281,758	1.69	+616.2	3
4	3,419,815	5,325,796	1.56	4	4,189,449	7,089,118	1.69	+ 22.5	4
4	82,200	128,200	1.56	4	108,105	182,697	1.69	+ 31.5	5
4	3,337,615	5,197,596	1.56	4	4,081,344	6,906,421	1.44	+ 22.3	6
4	259,459	395,107	1.52	4	428,588	748,455	1.74	+ 65.2	7
4	3,597,074	$5,592,703	$1.55	4	4,509,932	$7,654,876	$1.70	+ 25.4	8

[d] Includes waterproof-portland cement.
[e] Includes low-heat and waterproof-portland cements.
[f] Includes air-entrained, low-heat, and waterproof-portland cements.

PRODUCERS IN ILLINOIS, 1943–1945[a]

1944*				1945					Line No.
Plants[b]	Amount tons	Value at plants		Plants[b]	Amount tons	Value at plants		Percent change in amount from 1944	
		Total	Av.			Total	Av.		
3	4,829	$ 61,197	$12.67	3	4,248	$ 49,519	$11.66	− 12.1	1
5	211,502	1,662,586	7.86	6	201,533	1,582,040	7.85	− 4.7	2
2	[c]	[c]	—	3	15,929	104,927	6.59		3
2	[c]	[c]	—	3	16,552	118,974	7.19	+ 24.9	4
3	37,656	260,229	6.91	2	14,565	105,191	7.22		5
7	253,987	1,984,012	7.81	7	252,827	1,960,651	7.75	− 0.5	6
4	3,044	35,568	11.68	4	2,936	30,626	10.43	− 3.5	7
3	16,518	119,088	7.21	4	18,906	138,795	7.34	+ 14.2	8
2	17,439	127,871	7.30	3	12,938	98,837	7.64	− 26.0	9
5	37,001	282,527	7.64	5	34,780	268,258	7.71	− 6.0	10
7	290,988	$2,266,539	$7.78	7	287,607	$2,228,909	$ 7.75	− 1.2	11

[c] Included in other chemical and industrial uses (line 5).
[d] Included in other chemical and industrial uses (line 9).

Ganister and Sandstone

Ganister is a siliceous material found in Union and Alexander counties of southern Illinois. It is used for refractory purposes.

Sandstone and miscellaneous stone are produced in various parts of the State for road work, and for foundations, riprap, and rubble, mostly by non-commercial operations.

Sales and uses of these materials by producers in Illinois are given in table 60.

Table 60.—Ganister and Sandstone, Sold or Used by Producers in Illinois, 1942–1945[a]

Year	Amount[b] tons	Value at plants	
		Total	Av.
1942.....	2,948	$ 9,376	$3.18
1943.....	1,045	6,557	6.27
1944.....	548	4,774	8.71
1945.....	8,573	10,791	1.26

[a] Compiled from joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.
[b] Includes ganister for refractory purposes and sandstone for road work, and for foundations, riprap, and rubble.

CLAYS, CLAY PRODUCTS

Clays and clay products (including fuller's earth and silica refractories), sold and shipped by producers in Illinois in 1945, were valued at the plants at $19,492,000, retaining the position of the fourth largest mineral industry in Illinois, ranking next to coal, petroleum, and stone and rock products.

The sales of clays and clay products during 1945 showed an increase of $3,525,000 in value over those for 1944. This increase amounted to 22 percent, which was the largest total increase for any mineral group in Illinois for 1945, and was the second largest proportional increase, next to metals which attained 25 percent increase in value.

Clays, Including Fuller's Earth

Clays (including fuller's earth) which were sold and shipped as such, amounted to 213,100 tons, valued at the mines or pits at $914,000, an increase of 3 percent in value from the previous year, as shown in table 61. Clays used by their producers in the manufacture of clay products at their own plants are not included, but are reported in the resultant clay products in table 62.

Fuller's earth, sold and used by producers in Illinois during 1945, amounted to 43,664 tons, valued at the plants at $403,100 which was an increase of 3 percent in both amount and value from 1944. Operations in 1945 established a new all-time high record for tonnage and almost equalled the high record for value of $406,500 which was established in 1926.

Ceramic uses of clays sold and shipped as such in 1945 amounted to 111,500 tons, valued at the mines or pits at $238,200. The largest ceramic use was for laying and daubing refractories.

Nonceramic uses of clays in 1945 amounted to 101,600 tons, valued at the plants at $675,800. Next to the use of fuller's earth for oil refining and cleaners, the largest nonceramic use of clays was for bonding foundry sands. Nonceramic uses comprised 48 percent in amount and 74 percent in value of all clays sold or shipped as such during 1945.

The Illinois Geological Survey has conducted a cooperative research into the use of clays for bonding foundry sands. The results of this research have recently been published in Report of Investigations No. 102—"The Bonding Action of Clays—Part I: Clays in Green Molding Sands," and No. 110—"Part II: Clays in Dry Molding Sands," by Ralph E. Grim and F. Leicester Cuthbert. The use of surface clays for bonding foundry sands is considered in Report of Investigations No. 104—"Illinois Surface Clays as Bonding Clays for Molding Sands," by R. M. Grogan and J. E. Lamar.

Clay Products, Including Silica Refractories

Clay products (including silica refractories), sold and shipped by producers in Illinois in 1945, were valued at the plants at $18,577,900, an increase of 23 percent in value from 1944, as shown in table 62.

REFRACTORIES

Refractories, clay and silica, amounted to 227,700 tons, valued at the plants at $4,171 000. This was an increase of 14 percent in amount, due largely to many industrial plants making extensive repairs to refractory equipment. Many of these repairs had been deferred during the pressure of war production. Total value of refractories sold increased only 3 percent from 1944, due to more low-priced grades being included in the operations during 1945.

STRUCTURAL CLAY PRODUCTS

Structural clay products amounted to 1,123,800 tons, valued at the plants at $7,486,000. These totals showed the remarkable increase of 52 percent in amount and 76 percent in value from that for 1944, due to the resumption of civilian construction following four years of curtailment during the war. The 1945 total value for structural clay products exceeded by 2 percent their average value for the three immediate prewar years, 1939, 1940, 1941, which was $7,340,000.

TABLE 61.—CLAYS (INCLUDING FULLER'S EARTH) SOLD AND SHIPPED BY PRODUCERS IN ILLINOIS, BY KINDS AND BY USES, 1944 AND 1945[a]

Kind	1944*				1945					
	Plants[b]	Amount tons	Value at plants		Plants[b]	Amount tons	Value at plants		Percent change in amount from 1944	Percent change in value from 1944
			Total	Av.			Total	Av.		
Fire clay	4	159,425	$425,210	$2.67	5	152,204	$461,421	$3.03	− 4.5	+ 8.5
Stoneware clay	3	13,296	15,697	1.18	3	6,089	13,157	2.16	− 54.2	− 16.2
Kaolin	3	1,073	12,381	11.54	2	183	1,492	8.15	− 83.0	− 88.0
Shale and surface clay	1	14,810	46,825	3.16	2	10,953	34,909	3.19	− 26.1	− 25.4
Total clays (except Fuller's earth)	10	188,604	500,113	2.65	12	169,429	510,979	3.02	− 10.7	+ 2.2
Fuller's earth	1	42,277	390,346	9.23	1	43,664	403,085	9.23	+ 3.3	+ 3.3
Total clays sold and shipped	11	230,881	890,459	3.86	13	213,093	914,064	4.29	− 7.7	+ 2.7
Use										
Ceramic										
Refractories: laying and daubing	3	100,377	193,356	1.93	3	101,454	215,180	2.12	+ 1.1	+ 11.3
Mfg. fire brick, retorts, crucibles, etc.	5	5,175	19,836	3.83	4	372	5,867	15.77	− 92.8	− 70.4
Structural products	2	8,500	8,800	1.04	1	3,675	4,144	1.13	− 56.8	− 52.9
Whiteware and pottery	5	7,916	10,851	1.37	4	5,969	13,047	2.19	− 24.6	+ 20.2
Total ceramic uses	8	121,968	232,843	1.91	10	111,470	238,238	2.14	− 8.6	+ 2.3
Nonceramic										
Bonding foundry sands	3	43,116	162,403	3.77	3	35,969	157,711	4.38	− 16.6	− 2.9
Fillers and other nonceramic uses	4	23,520	104,867	4.46	4	21,990	115,030	5.23	− 6.4	+ 9.7
Oil refining, cleaners	1	42,277	390,346	9.23	1	43,664	403,085	9.23	+ 3.3	+ 3.3
Total nonceramic uses	6	108,913	657,616	6.04	6	101,623	675,826	6.67	− 6.7	+ 2.8
Total clays sold and shipped	11	230,881	$890,459	$3.86	13	213,093	$914,064	$4.29	− 7.7	+ 2.7

* Revised figures.
[a] Compiled from joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.
[b] Number of plants reporting production.

TABLE 62.—CLAY PRODUCTS (INCLUDING SILICA REFRACTORIES) SOLD AND SHIPPED BY PRODUCERS IN ILLINOIS, 1944 AND 1945[a]

Kind	1944*				1945					
	Plants[b]	Amount tons	Value at plants		Plants[b]	Amount tons	Value at plants		Percent change in amount from 1944	Percent change in value from 1944
			Total	Av.			Total	Av.		
Refractories, clay and silica										
Firebrick and shapes	7	166,897	$3,128,652	$18.75	7	197,971	$3,426,008	$17.31	+ 18.6	+ 9.5
Plastic and castable refractories	5	11,715	451,045	38.50	5	10,725	324,188	30.23	− 8.5	− 28.1
Cements and mortars	6	8,267	161,478	19.53	6	8,722	330,075	37.84	+ 5.5	+104.4
Other refractories	5	13,142	312,212	23.83	5	10,337	90,706	8.77	− 21.3	− 70.9
Total refractories	11	200,021	4,053,387	20.26	11	227,755	4,170,977	18.31	+ 13.9	+ 2.9
Structural clay products		thous.				thous.				
Common brick	24	192,457	2,270,994	11.80	23	310,537	4,614,749	14.86	+ 61.4	+103.2
Face brick	11	18,646	329,997	17.70	16	48,302	1,012,147	20.95	+159.0	+206.7
Paving block	2	576	14,836	25.76	1	472	14,978	31.73	− 18.0	+ 1.0
		tons				tons				
Total (in equivalent tons)	26	529,771	2,615,827	4.93	28	898,753	5,641,874	6.28	+ 69.6	+115.7
Drain tile	12	77,439	617,862	7.98	11	69,115	599,304	8.67	− 10.7	− 3.0
Structural tile	15	43,935	290,649	4.94	16	62,580	388,622	6.21	+ 42.4	+ 33.7
Sewer pipe, flue lining, wall coping	2	18,641	430,898	23.12	3	19,371	478,715	24.71	+ 3.9	+ 11.1
Terra cotta and glazed block[c]	—	—	—	—	—	—	—	—	—	—
Other structural products	7	67,801	303,281	4.47	5	73,956	377,538	5.10	+ 9.1	+ 24.5
Total structural clay products	38	737,587	4,258,517	5.77	38	1,123,775	7,486,053	6.66	+ 52.4	+ 75.8
Whiteware and pottery										
Flowerpots	3	—	230,995	—	2	—	111,494	—	—	—
Stoneware and kitchenware	4	—	1,194,072	—	4	—	1,160,663	—	—	− 2.8
Dinnerware and art china	3	—	422,365	—	3	—	422,200	—	—	0
Art pottery	5	—	1,576,542	—	5	—	1,566,683	—	—	− 0.6
Vitreous-china plumbing fixtures	3	—	2,566,369	—	3	—	2,886,253	—	—	+ 12.5
Porcelain and other whiteware	4	—	774,277	—	3	—	773,590	—	—	− 0.1
Total whiteware and pottery	16	—	6,764,620	—	15	—	6,920,883	—	—	+ 2.3
Total clay products	65	—	15,076,524	—	63	—	18,577,913	—	—	+ 23.2
Total clays and clay products (Tables 61 and 62)	70	—	$15,966,983	—	70	—	$19,491,977	—	—	+ 22.1

* Revised figures. [a] Compiled from canvass made by Illinois Geological Survey. [b] Number of plants reporting production. [c] Included in "Other structural products."

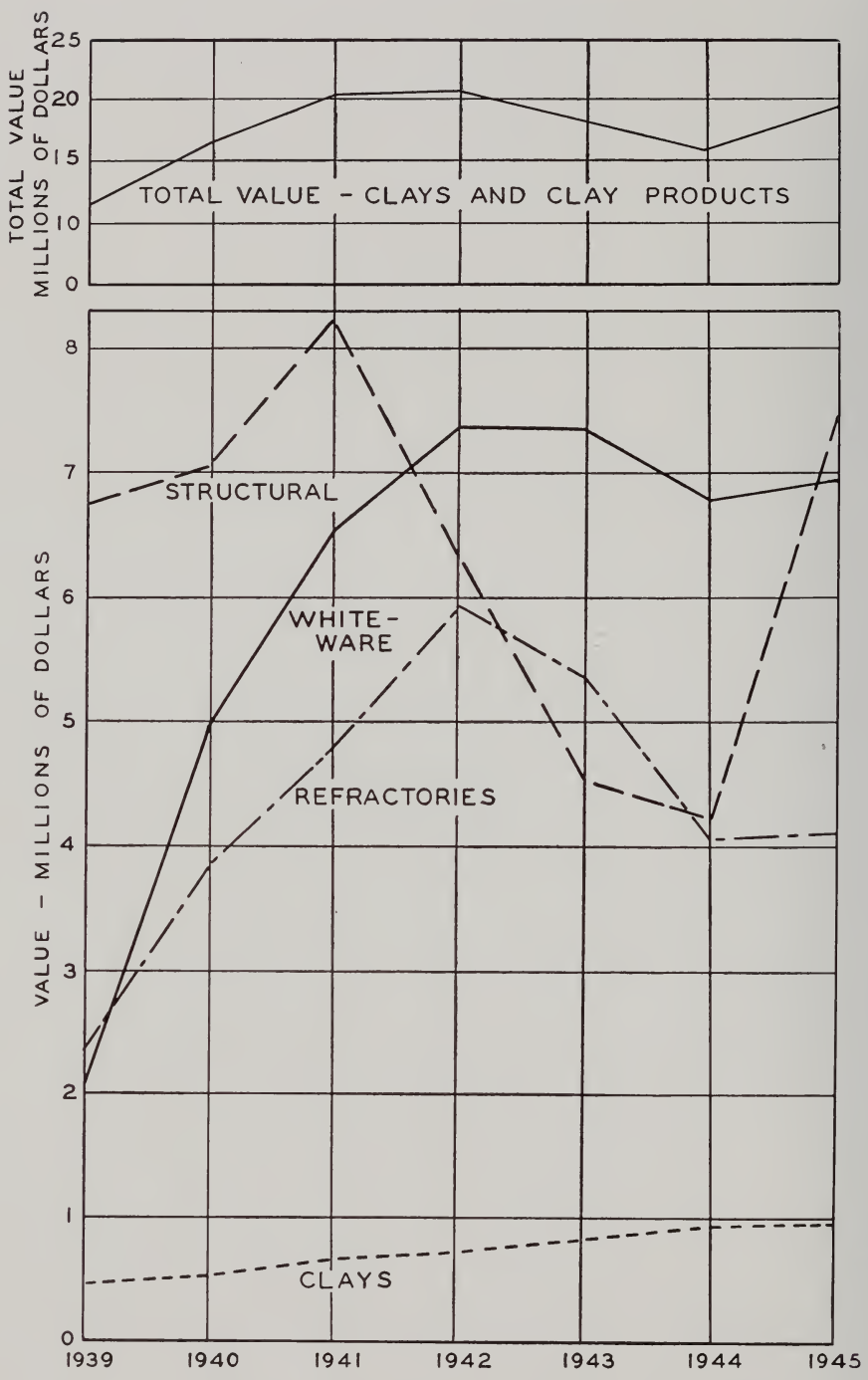

FIG. 16.—Value of annual sales of clays and clay products in Illinois, 1939–1945.

Common brick sold were valued at $4,615,000, which showed an increase of 103 percent in value from that for 1944. This was an increase of 64 percent above their average value for 1939, 1940, 1941, which was $2,807,800.

Face brick sold in 1945 were valued at $1,012,100, which was an increase of 207 percent in value above that for 1944. This remarkable proportional increase brought the 1945 value of face brick sold to the point where it still was 44 percent less than the average value for 1939, 1940, 1941, which was $1,795,400.

Drain tile sold in 1945 were valued at $599,300, which was a decrease of 3 percent in value from that for 1944, but this 1945 value was 26 percent more than the average value for 1939, 1940, 1941, which was $473,000.

Structural tile sold in 1945 were valued at $388,600, which was an increase of 34 percent in value above that for 1944. The 1945 value of structural tile sold was 49 percent less than the average value for 1939, 1940, 1941, which was $759,100.

Sewer pipe, flue lining, and wall coping sold in 1945 were valued at $478,700, which was an increase of 11 percent in value above that for 1944, but was 3 percent less than the average value for 1939, 1940, 1941, which was $490,900.

WHITEWARE AND POTTERY

Whiteware and pottery sold and shipped by Illinois producers in 1945 were valued at $6,920,900, an increase of 2 percent in value above that for 1944. The 1945 value was 53 percent more than the average value for 1939, 1940, 1941, which was $4,518,600. This indicated that the large demand for whiteware developed during the war period was continued during 1945.

Stoneware and kitchenware sold in 1945 were valued at $1,160,700, which was a decrease of 3 percent in value from that for 1944, but was 92 percent more than the average value for 1939, 1940, 1941, which was $607,700.

Art pottery sold in 1945 was valued at $1,566,700, practically equal to that for 1944, and was 71 percent more than the average value for 1939, 1940, 1941, which was $914,900.

Vitreous-china plumbing fixtures sold in 1945 were valued at $2,886,300, which was an increase of 12 percent in value above that for 1944, and was 46 percent more than the average value for 1939, 1940, 1941, which was $1,976,100.

Value of annual sales of clays and clay products by producers in Illinois for the years 1939-1945 are shown graphically in figure 16.

SAND AND GRAVEL

Silica Sand

The amount of silica sand sold or used by producers in Illinois in 1945 was 2,576,400 tons, valued at the plants at $3,723,700, as shown in table 63. This was a decrease in amount of nearly 23 percent under that for the previous year, caused by general slackening of foundry operations. Illinois ranks first among the states in the production of silica sand for steel molding sand and for glass sand.

Other Sand and Gravel

Table 64 shows sand (other than silica sand) and gravel sold or used by producers in Illinois in 1943, 1944, and 1945. The total of all sand (other than silica sand) and gravel for 1945 amounted to 9,399,400

Table 63.—Silica Sand, Sold or Used

Line No.	Use	Type of operation	1943			
			Plants[b]	Amount tons	Value at plants	
					Total	Av.
	Industrial Sands					
1	Glass sand	Commercial...	4	1,004,796	$1,425,895	$1.42
2	Steel molding sand	" ...	11	2,285,092	2,813,907	1.24
3	Blast, grinding and polishing sands	" ...	3	186,662	553,844	2.97
4	Fire or furnace sand	" ...	3	46,399	53,024	1.12
5	Engine and filter sands	" ...	3	10,755	17,372	1.62
6	Other silica sand[d]	" ...	2	58,857	103,499	1.76
7	Total	Commercial...	12	3,592,561	4,967,541	1.38
	Construction Sands					
8	Structural and paving sands	Commercial...	2	21,183	32,941	1.56
9	Total silica sand	Commercial...	12	3,613,744	$5,000,482	$1.38

[a] Compiled from joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.
[b] Number of plants reporting production.
[c] Included in "Fire or furnace sand".
[d] Except sand ground for silica flour, which is given in table 65, "Ground Silica".

tons, valued at the plants at $4,684,500. This was an increase of 4 percent in amount above that for 1944. Amount of sand increased 12 percent, mostly for construction. Amount of gravel remained practically the same.

Commercial and Government-and-Contractor Operations

About 740,000 tons, or 8 percent of the sand and gravel produced in Illinois during 1945, came from government-and-contractor operations which includes the State of Illinois, counties, townships, and municipalities, produced either by themselves or by contractors expressly for their use. Purchases by government agencies from commercial producers are included in commercial operations.

Annual production and value of sand (including silica sand) and gravel in Illinois is shown graphically in figure 17 for each year since 1920. The average value per ton is also given for each year.

by Producers in Illinois, 1943–1945[a]

1944				1945					
Plants[b]	Amount tons	Value at plants		Plants[b]	Amount tons	Value at plants		Percent change in amount from 1944	Line No.
		Total	Av.			Total	Av.		
4	985,059	$1,491,255	$1.51	4	969,321	$1,461,958	$1.51	− 1.6	1
12	2,039,163	2,404,148	1.18	12	1,311,579	1,612,858	1.23	− 35.7	2
4	182,535	540,960	2.96	3	125,541	398,370	3.17	− 36.7	3
5	35,254	53,832	1.53	3	63,893	59,404	.93	+110.5	4
—	[c]	[c]	—	3	11,933	30,837	2.58		5
3	72,242	126,986	1.76	4	80,193	138,702	1.73	+ 11.0	6
12	3,314,253	4,617,181	1.39	13	2,562,460	3,702,129	1.44	− 22.7	7
2	16,932	25,798	1.52	2	14,000	21,602	1.54	− 17.3	8
12	3,331,185	$4,642,979	$1.39	13	2,576,460	$3,723,731	$1.45	− 22.7	9

TABLE 64.—SAND (OTHER THAN SILICA SAND) AND GRAVEL,

Line No.	Kind and Use	Type of Operation	1943*			
			Plants[b]	Amount tons	Value at plants	
					Total	Av.
	Sand (other than silica sand)					
	Industrial Sands					
1	Natural-bonded molding sand	Commercial...	8	81,375	$ 104.494	$1.28
2	Engine sand	" ...	14	[c] 160,397	[c] 69,307	.43
3	Total	Commercial...	22	241,772	173,801	.72
	Construction Sands					
4	Structural sands[d]	Commercial...	56	1,914,595	853,053	.45
5	Paving and highway-structures sand	" ...	46	873,656	528,483	.60
6	Paving and highway-structures sand	Gov.-contr....	5	21,537	15,457	.72
7	Railroad-ballast sand	Commercial...	7	341,699	97,317	.28
8	Other construction sands	" ...	7	159,132	95,501	.60
9	Total	Both.....	88	3,310,619	1,589,811	.48
10	Total sand (other than silica sand)	Commercial...	83	3,530,854	1,748,155	.49
11	Total sand (other than silica sand)	Gov.-contr....	5	21,537	15,457	.72
12	Total sand (other than silica sand)	Both.....	88	3,552,391	1,763,612	.50
	Gravel					
13	Structural gravel[d]	Commercial...	63	1,993,963	1,103,387	.55
14	Structural gravel[d]	Gov.-contr....	4	19,095	3,991	.21
15	Paving and highway-structures gravel	Commercial...	79	2,297,623	1,104,210	.48
16	Paving and highway-structures gravel	Gov.-contr....	36	662,275	315,802	.48
17	Railroad-ballast gravel	Commercial...	18	1,680,907	729,528	.43
18	Novaculite gravel (paving)	" ...	1	28,422	20,873	.73
19	Other gravel	" ...	10	107,475	71,106	.66
20	Total	Both.....	151	6,789,760	3,348,897	.49
21	Total gravel	Commercial...	112	6,108,390	3,029,104	.50
22	Total gravel	Gov.-contr....	39	681,370	319,793	.47
23	Total gravel	Both.....	151	6,789,760	3,348,897	.49
24	Total sand (other than silica sand) and gravel	Commercial...	132	9,639,244	4,777,259	.50
25	Total sand (other than silica sand) and gravel	Gov.-contr....	40	702,907	335,250	.48
26	Total sand (other than silica sand) and gravel.	Both.....	172	10,342,151	5,112,509	.49
	Summary—Sand (including silica sand) and gravel (Tables 63 and 64)					
27	Total industrial sands (including silica sand).	Both.....	34	3,834,333	5,141,342	1.34
28	Total construction sands and gravel	Both.....	165	10,121,562	4,971,649	.49
29	Total sand (including silica sand) and gravel. (Tables 63 and 64)	Both.....	184	13,955,895	$10,112,991	$0.72

* Revised figures.
[a] Compiled from joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.
[b] Number of plants reporting production.

Sold or Used by Producers in Illinois, 1943–1945[a]

1944*				1945					Line No.
Plants[b]	Amount tons	Value at plants		Plants[b]	Amount tons	Value at plants		Percent change in amount from 1944	
		Total	Av.			Total	Av.		
6	78,889	$ 90,318	$1.14	7	114,860	$ 136,516	$1.19	+ 45.6	1
12	176,970	85,871	.49	11	163,222	86,765	.53	− 7.8	2
18	255,859	176,189	.69	18	278,082	223,281	.80	+ 8.7	3
59	1,668,437	817,886	.49	53	1,799,162	833,995	.46	+ 7.8	4
37	667,035	348,950	.52	36	507,002	292,499	.58	− 24.0	5
8	23,204	11,877	.51	7	271,990	176,715	.65	—	6
6	307,529	81,162	.26	5	342,165	105,825	.39	+ 10.9	7
7	34,506	14,305	.41	9	107,982	76,403	.71	+212.9	8
77	2,700,711	1,274,180	.47	73	3,028,301	1,485,437	.49	+ 12.1	9
75	2,933,366	1,438,492	.49	73	3,034,393	1,532,003	.50	+ 3.4	10
8	23,204	11,877	.51	7	271,990	176,715	.65	—	11
83	2,956,570	1,450,369	.49	80	3,306,383	1,708,718	.49	+ 11.8	12
70	1,775,572	934,972	.53	64	1,808,800	967,177	.53	+ 1.9	13
2	5,800	1,950	.33	—	[e]	[e]	—	—	14
79	1,751,131	917,262	.52	74	2,087,338	1,087,812	.52	+ 19.2	15
43	628,288	361,091	.57	37	465,330	251,483	.54	− 26.6	16
14	1,765,560	702,168	.40	15	1,640,566	614,512	.37	− 7.1	17
1	21,443	17,154	.80	1	16,217	13,735	.85	− 24.4	18
5	109,971	33,703	.31	9	74,809	41,086	.55	− 32.0	19
156	6,057,765	2,968,300	.49	141	6,093,060	2,975,805	.49	+ 0.6	20
111	5,423,677	2,605,259	.48	104	5,627,730	2,724,322	.48	+ 3.8	21
45	634,088	363,041	.57	37	465,330	251,483	.54	− 26.6	22
156	6,057,765	2,968,300	.49	141	6,093,060	2,975,805	.49	+ 0.6	23
123	8,357,043	4,043,751	.48	118	8,662,123	4,256,325	.49	+ 3.7	24
47	657,292	374,918	.57	39	737,320	428,198	.58	+ 12.1	25
170	9,014,335	4,418,669	.49	157	9,399,443	4,684,523	.50	+ 4.2	26
30	3,570,112	4,793,370	1.34	31	2,840,542	3,925,410	1.38	− 20.4	27
167	8,775,408	4,268,278	.49	151	9,135,361	4,482,844	.49	+ 4 1	28
183	12,345,520	$9,061,648	$0.73	170	11,975,903	$8,408,254	$0.70	− 3 0	29

[c] Includes filter sands.
[d] Excludes highway structures.
[e] Included in paving and highway-structures gravel, Gov.-contr. operations.

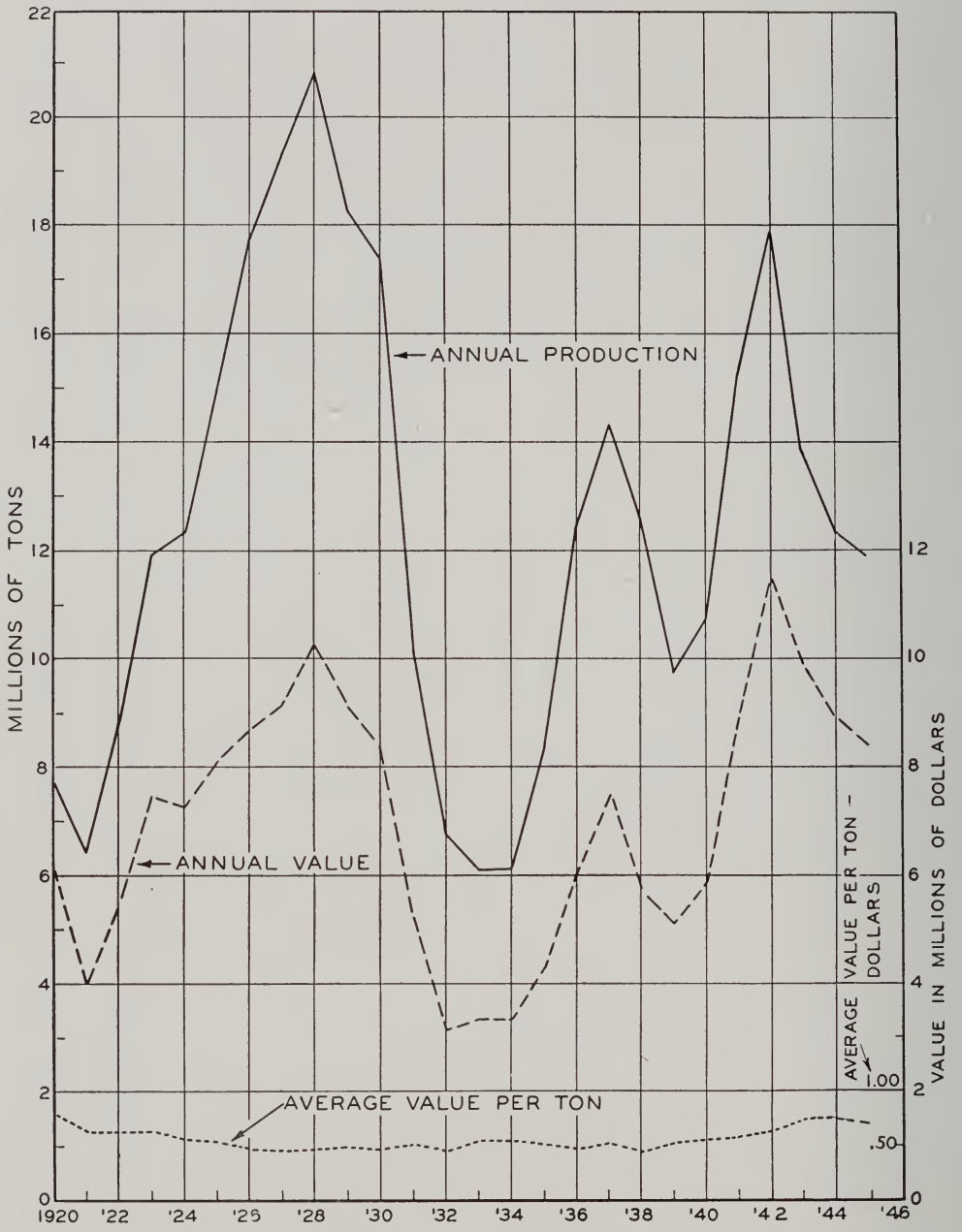

FIG. 17.—Annual production and value of sand (including silica sand) and gravel in Illinois, 1920–1945.

SILICA AND TRIPOLI

Ground Silica

During 1945 the amount of ground silica or silica flour, made by fine grinding of washed silica sand, which was sold or used by producers in Illinois, amounted to 140,400 tons, valued at the plants at $935,400, as shown in table 65. This was a decrease of 10 percent in amount under that for the previous year. Illinois ranked first among the states in the production of ground silica. It is used in the abrasive, foundry, filler, ceramic and other fields. In the ceramic industry, ground silica is known as "silica flour" or "potter's flint."

Tripoli ("Amorphous" Silica)

The amount of tripoli ("amorphous" silica) sold or used by producers in Illinois during 1945 amounted to 11,100 tons, valued at the plants at $184,200, as given in table 66. Illinois ranked first among the states in production of tripoli. This material is used as an abrasive, polish, filler, and for many other purposes.

Table 65.—Ground Silica, Sold or Used by Producers in Illinois, 1944 and 1945[a]

Use	1944			1945			
	Amount tons	Value at plants		Amount tons	Value at plants		Percent change in amount from 1944
		Total	Av.		Total	Av.	
Abrasive	46,853	$317,759	$6.78	47,839	$296,740	$6.20	+ 2.1
Enamel and glass	6,111	45,497	7.42	7,018	54,315	7.74	+14.8
Foundry and filler	71,029	500,694	7.05	56,276	385,719	6.85	−20.8
Pottery, procelain, and tile	15,067	94,906	6.30	13,318	88,334	6.63	−11.7
Other uses	17,293	117,929	6.86	15,925	110,281	6.93	− 7.9
Total	156,353	$1,076,785	$6.88	140,376	$935,389	$6.66	−10.3

[a] Compiled from joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.

Table 66.—Tripoli ("Amorphous" Silica), Sold or Used by Producers in Illinois, 1944 and 1945[a]

Use	1944*			1945			
	Amount tons	Value at plants		Amount tons	Value at plants		Percent change in amount from 1944
		Total	Av.		Total	Av.	
Abrasive	4,010	$ 68,577	$17.10	3,940	$ 65,260	$16.56	− 1.7
Filler	5,410	96,577	17.80	7,204	118,929	16.51	+33.2
Other uses	2,611	40,578	15.54	—	—	—	—
Total	12,031	$205,732	$17.02	11,144	$184,189	$16.53	− 7.4

* Revised figures.
[a] Compiled from joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.

FLUORSPAR

Table 67.—Production of Domestic Fluorspar by States, 1945[a]
(Net tons)

State	Production
Illinois	148,900
Kentucky	95,000
New Mexico	14,400
Colorado	52,200
Arizona	1,100
Nevada	7,038
Texas	3,518
Utah	2,918
Washington	169
Total	325,243

[a] Unpublished figures from U. S. Bur. Mines, Metal Economics Division.

Fluorspar Industry in 1945

PRODUCTION

The end of the war brought a decrease in production, shipments, and consumption of fluorspar, according to the Bureau of Mines, U. S. Department of the Interior. However, imports of fluorspar established a new high in 1945.

Production of finished fluorspar from domestic ore (table 67) was 325,243 net tons, a decline of 21 percent from 1944. Although the output of metallurgical-grade and ceramic-grade fluorspar was ample for

Table 68.—Fluorspar Shipped from Mines in the United States, 1944–1945, by States[a]

State	1944			1945		
	Short tons	Value		Short tons	Value	
		Total	Average		Total	Average
Illinois	176,259	$5,954,991	$33.79	147,251	$5,014,807	$34.06
Kentucky	112,791	3,363,788	29.82	95,142	2,832,945	29.78
Colorado	65,209	1,604,043	24.60	52,437	1,333,735	25.43
New Mexico	42,973	1,205,830	28.06	14,449	390,331	27.01
Nevada	7,293	251,421	23.37	7,038	304,045	22.43
Utah	3,466			2,973		
Texas	4,769	100,381	21.05	3,413		
Washington	—	—	—	132		
Arizona	976	21,983	22.52	1,126	21,016	18.66
California	26	650	25.00	—	—	—
Wyoming	19	400	21.05	—	—	—
Total	413,781	$12,503,487	$30.22	323,961	$9,896,879	$30.55

Table 69.—Fluorspar Shipped from Mines in the United States, 1944–45, by Uses[a]

Use	1944			1945		
	Short tons	Value		Short tons	Value	
		Total	Average		Total	Average
Steel	219,361	$6,087,077	$27.75	186,073	$5,182,059	$27.85
Iron foundry	4,044	109,869	27.17	3,422	94,852	27.72
Glass	27,174	892,761	32.85	32,300	1,033,737	32.00
Enamel	2,685	90,444	33.68	3,660	128,612	35.14
Hydrofluoric acid	121,084	4,251,686	35.11	80,155	2,896,267	36.13
Miscellaneous	13,057	416,672	31.91	7,482	254,560	34.02
Government stock pile	24,396	589,069	24.15	9,449	260,853	27.61
Foreign consumption	1,980	65,909	33.29	1,420	45,939	32.35
Total	413,781	$12,503,487	$30.22	323,961	$9,896,879	$30.55

[a] U. S. Bur. Mines, Mineral Market Report No. 1392, April 22, 1946.

requirements throughout 1945, production of acid-grade fluorspar from domestic ore was not adequate for requirements up to V-J day. During the first seven months of 1945 the output averaged only 8,700 tons monthly, while consumption averaged about 11,600 tons. This deficit was met by milling Mexican ore and by the use (after drying) of a substantial quantity of flotation concentrates from Newfoundland. From Mexican ore alone, flotation mills in the United States recovered 16,486 tons of acid-grade fluorspar in 1945. These concentrates so recovered and shipped are not included in the statistics on production and shipments.

The 1945 shipments from mines (tables 68, 69) aggregating 323,961 tons, were 22 percent less than the all-time high established in 1944. Shipments from mines by states, by uses, and a further division by grades and industries are to be found in tables 68, 69, and 70 respectively. Shipments by river or river-rail were 52,718 tons in 1945 compared with 69,536 tons in 1944. Although all producing states, except Arizona and Washington, shipped less fluorspar in 1945 than in 1944, Illinois maintained its rank as chief producing state by supplying 45 percent of the total shipments in 1945.

CONSUMPTION

Consumption of fluorspar (table 71) declined to 356,090 net tons in 1945 after reaching an all-time high of 410,170 net tons in 1944. Likewise, consumption of fluorspar in the manufacture of hydrofluoric acid, the second largest user, also declined. The glass industry, ranking third in importance as a consumer of this material, accounted for 17 percent more in 1945 than in 1944. The steel industry was again the chief consumer of fluorspar accounting for 56 percent of the total (fig. 18).

Figure 18 also shows the comparative consumption, by consuming industries and sources for 1944 and 1945, and the comparison between these years and the average for the six-year period, 1935-1940.

Table 72 presents a summary of the fluorspar shipped from mines, by uses, since 1939

TABLE 70.—FLUORSPAR SHIPPED FROM MINES IN THE UNITED STATES, 1944–1945, BY GRADES AND INDUSTRIES, IN SHORT TONS[a]

Grade and industry	1944	1945	Grade and industry	1944	1945
Fluxing gravel and foundry lump:			Ground and flotation concentrates:		
Ferrous	210,930	[b]184,645	Ferrous	[c]14,715	[c,d]6,791
Nonferrous	1,264	1,170	Nonferrous	6,157	2,211
Cement	646	326	Glass and enamel	29,859	35,960
Miscellaneous	389	158	Hydrofluoric acid	119,512	79,562
Government stock pile	23,825	7,225	Miscellaneous	2,341	1,638
Exported	55	—	Government stock pile	572	2,224
			Exported	1,925	1,420
Total	237,108	[b]193,524			
			Total	175,081	[d]129,806
			Total:		
Acid lump:			Ferrous	225,665	191,472
Ferrous	20	36	Nonferrous	7,421	3,383
Nonferrous	—	2	Cement	646	326
Hydrofluoric acid	1,572	593	Glass and enamel	29,859	35,960
			Hydrofluoric acid	121,084	80,155
Total	1,592	631	Miscellaneous	2,730	1,796
			Government stock pile	24,396	9,449
			Exported	1,980	1,420
			Total	413,781	323,961

[a] U. S. Bur. Mines, Mineral Market Report No. 1392, April 22, 1946.
[b] Includes 4,182 tons of flotation concentrates, which were blended with fluxing gravel.
[c] Includes pelletized gravel.
[d] Excludes 4,182 tons of flotation concentrates, which were blended with fluxing gravel.

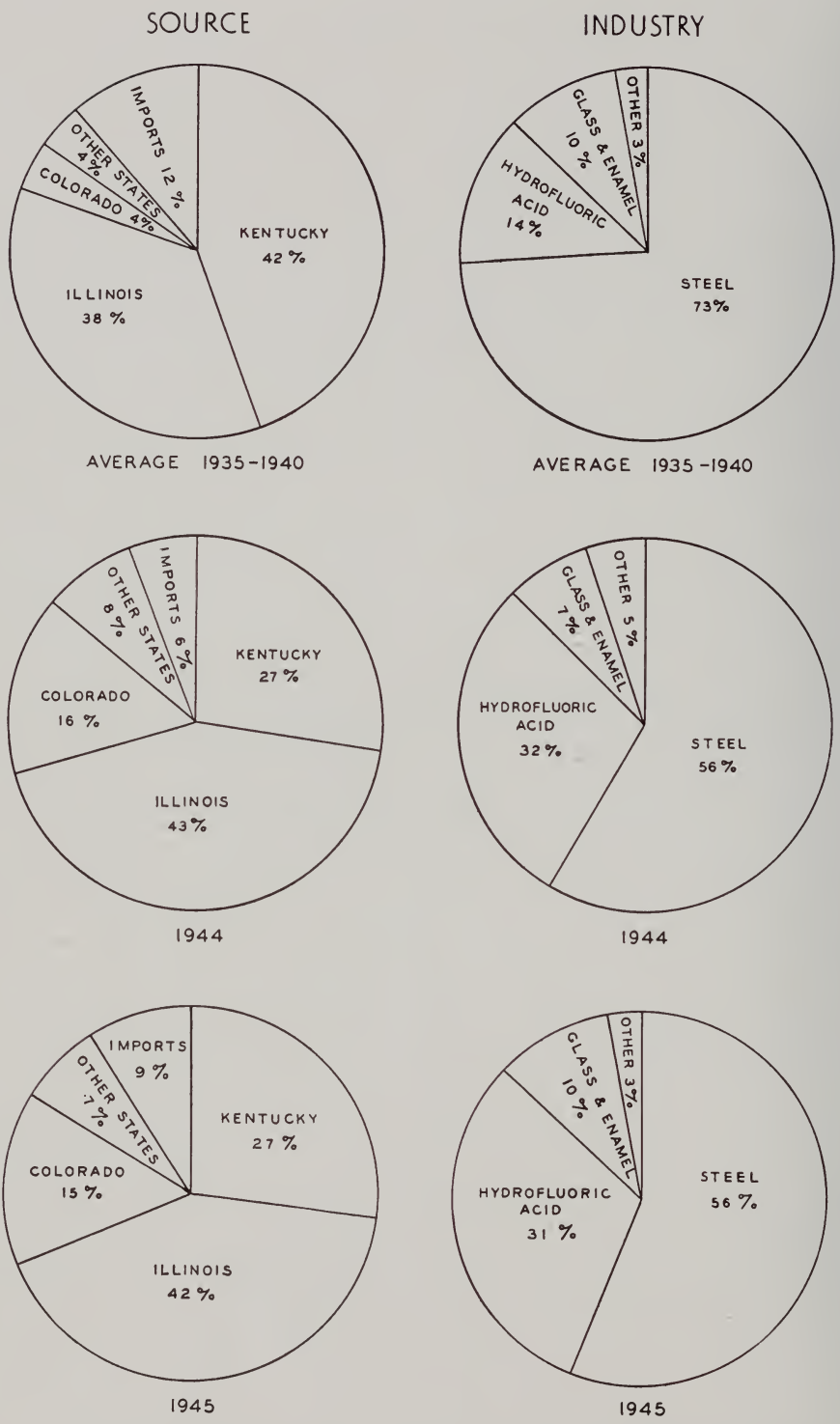

FIG. 18.—Average annual fluorspar consumption (of both domestic and foreign fluorspar) in the United States, 1935–1940, compared with 1944 and 1945, by sources and consuming industries.

TABLE 71.—FLUORSPAR (DOMESTIC AND FOREIGN) CONSUMED AND IN STOCK IN THE UNITED STATES, 1944–1945, BY INDUSTRIES, IN SHORT TONS[a]

Industry	1944			1945		
	Consumption	Stocks at consumers' plants Dec. 31	In transit to consumers' plants Dec. 31	Consumption	Stocks at consumers' plants Dec. 31	In transit to consumers' plants Dec. 31
Basic open-hearth steel	201,788			176,488		
Electric-furnace steel	27,307	56,956	6,566	20,873	67,800	5,871
Bessemer steel	1,106			555		
Iron foundry	4,101	1,345	—	3,877	1,082	51
Ferro-alloys	3,714	876	—	2,909	1,013	—
Hydrofluoric acid	129,553	27,249	1,325	109,315	20,757	506
Primary aluminum	1,487	696	—	1,190	665	—
Primary magnesium	5,594	943	—	811	757	—
Glass	27,315	5,621	950	31,874	5,962	681
Enamel	2,547	1,202	98	3,695	1,433	101
Welding rod	1,928	175	1	1,457	257	—
Cement	421	1,278	—	365	1,214	—
Miscellaneous	3,309	2,105	101	2,681	2,208	12
Total	410,170	98,446	9,041	356,090	103,148	7,222

[a] U. S. Bur. Mines, Mineral Market Report No. 1392, April 22, 1946.

TABLE 72.—FLUORSPAR SHIPPED FROM MINES IN ILLINOIS AND THE UNITED STATES, BY USES, 1939–1946[a]*

	Steel	Hydrofluoric Acid	Ceramics	All others	Total
1939					
Illinois	[b]	[b]	[b]	[b]	75,257
United States	125,371	27,463	21,884	5,077	179,795
1940					
Illinois	[b]	[b]	[b]	[b]	104,698
United States	162,772	33,608	20,269	8,469	225,118
1941					
Illinois	[b]	[b]	[b]	[b]	133,333
United States	214,120	52,674	32,051	9,640	308,485
1942					
Illinois	77,947	62,573	7,520	6,754	154,794
United States	225,233	68,083	22,813	15,171	351,300
1943					
Illinois	89,789	89,599	6,741	10,327	196,456
United States	220,809	123,680	21,059	23,354	388,902
1944					
Illinois	71,516	81,493	14,058	8,184	175,251
United States	219,361	121,084	29,859	17,101	387,604
1945					
Illinois	65,440	55,688	19,182	6,166	146,476
United States	186,073	80,155	35,960	10,904	313,092

[a] U. S. Bureau of Mines; Minerals Yearbooks 1940-1944: M.M.S. 1392, April 22, 1946.
[b] Statistics not available by uses until 1942.
* Does not include government stock piles and foreign consumption.

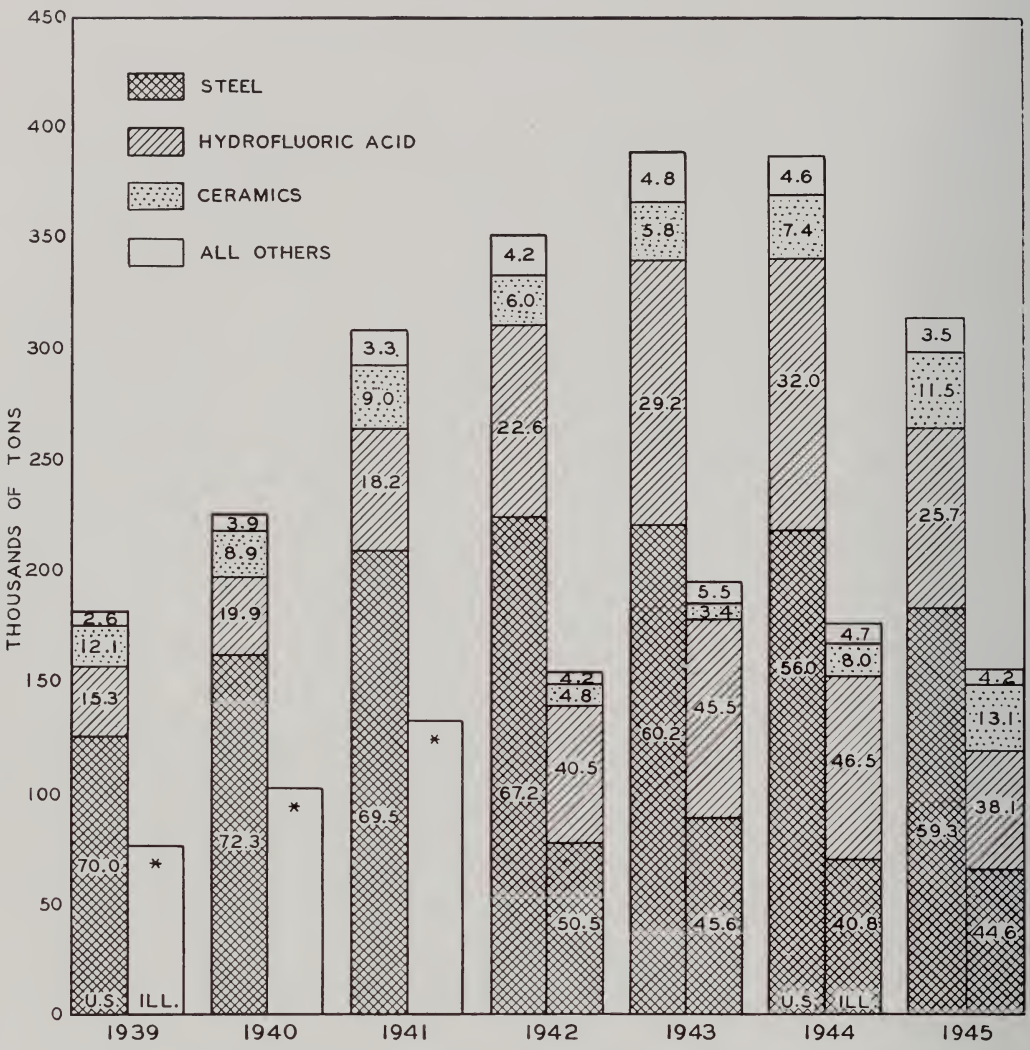

FIG. 19.—Fluorspar shipped from mines, by uses, United States and Illinois, 1939–1945.

tor the United States with comparative figures for Illinois since 1942, which was the earliest year for which these data are available. A graphic summary of this table is presented in figure 19. A close correlation may be noted between these percentages and those of actual consumption shown in figure 18.

Stocks of fluorspar at consumers' plants, table 71, amounted to 103,148 net tons on December 31, 1945 which was 5 percent greater than stocks on hand at the close of 1944. Stocks of finished fluorspar at the mines, 20,249 net tons, were 6 percent greater at the close of 1945 than at the close of 1944. Stocks held by the Office of Metals Reserve were 198,856 tons at the close of 1945 as compared with 129,883 tons at the close of 1944.

Stocks of fluorspar in the Government stock pile in the United States on December 31 totaled 230,674 tons and comprised 180,882 tons of metallurgical grade, 17,974 tons of acid grade, and 31, 818 tons of milling ore.[1] These stocks are stored at Baltimore, Maryland; Boulder, Colorado; Chicago, Illinois; El Paso and Laredo, Texas;

[1] U. S. Bur. Mines, Monthly Fluorspar Report No. 22, March 7, 1946.

TABLE 73.—SALIENT STATISTICS OF FINISHED FLUORSPAR IN THE UNITED STATES, 1943–1944, AND JANUARY–DECEMBER 1945, IN NET TONS[a]

Date	Production	Shipments from mines	General imports (receipts)	Consumption	Stocks at end of period			
					Consumers' plants	Domestic mines	Government stock pile	Total
1943	405,600	406,016	43,769	388,885	105,933	19,026	36,223	161,182
1944	413,700	413,781	92,499	410,170	98,446	19,055	129,885	247,386
1945:								
January	29,551	26,430	11,692	33,063	95,936	21,731	134,085	251,752
February	26,695	26,898	3,300	31,342	93,008	21,528	140,996	255,532
March	25,720	26,190	8,016	37,419	88,447	21,011	144,856	254,314
April	25,939	28,204	10,307	35,102	85,217	18,746	149,821	253,784
May	32,549	35,986	13,204	35,423	84,500	15,309	156,483	256,292
June	34,420	33,710	12,305	32,797	91,358	16,019	162,240	269,617
July	32,381	34,953	15,092	32,790	94,990	13,447	173,461	281,898
August	29,626	27,940	12,916	27,760	102,868	15,133	195,901	313,902
September	21,493	21,520	4,378	22,392	100,157	15,106	199,564	314,827
October	23,053	24,956	2,472	22,297	102,124	13,203	202,686	318,013
November	22,959	20,166	5,155	23,694	103,272	15,996	203,642	322,910
December	20,926	17,307	1,889	22,846	102,789	19,615	198,856	321,260
Total	325,312	324,260	100,726	356,925	—	—	—	—

[a] The figures on production, shipments, and mine stocks cover fluorspar of domestic origin only. U. S. Bur. Mines, Monthly Fluorspar Report No. 22, March 7, 1946.

TABLE 74.—FLUORSPAR IMPORTED FOR CONSUMPTION IN THE UNITED STATES, 1944–45, BY COUNTRIES[a]

Country	1944		1945	
	Short tons	Value	Short tons	Value
Canada	69	$ 1,951	[b] 2,361	[b] $ 75,085
Mexico	58,324	980,089	62,575	1,054,692
Newfoundland	16,072	431,232	[b] 10,875	[b] 332,556
Spain	9,177	222,080	27,322	694,125
Union of South Africa	3,557	44,715	—	—
United Kingdom	1	37	—	—
Total	87,200	$1,680,104	103,133	$2,156,458

[a] U. S. Bur. Mines, Mineral Market Report No. 1392, April 22, 1946.
[b] Bureau of Mines has determined that 1,691 tons valued at $56,918 credited to Canada by the U. S. Department of Commerce, originated in Newfoundland.

Gila, New Mexico; and Cornwells Heights and Philadelphia, Pennsylvania.

Imports of fluorspar, table 74, established a new high in 1945 of 103,133 net tons, which was an 18 percent increase over the 1944 imports.

The amount of imported fluorspar delivered to consumers in the United States, 1944-1945, by uses is shown in table 75; table 76 gives a detailed report, by months, for 1945. These figures were withheld from publication during the war for military reasons.

Most of the imported fluorspar is used in industries along the Atlantic seacoast where, because of low foreign production costs and relatively low ocean freight rates, many foreign countries can deliver fluorspar, with tariff paid, at a still lower rate than it can be delivered from the Illinois-Kentucky mines. Likewise western fluorspar, from New Mexico in particular, is largely shipped

TABLE 75.—IMPORTED FLUORSPAR DELIVERED TO CONSUMERS IN THE UNITED STATES, 1944–45, BY USES[a]

Use	1944			1945		
	Short tons	Selling price at tidewater, border, or f.o.b. flotation mill in United States, including duty		Short tons	Selling price at tidewater, border, or f.o.b. flotation mill in United States, including duty	
		Total	Average		Total	Average
Steel	1,639	$ 42,804	$26.12	21,027	$ 555,530	$26.42
Hydrofluoric acid	5,907	208,067	35.22	22,579	811,025	35.92
Magnesium	224	6,419	28.66	60	2,100	35.00
Ferro-alloys	45	1,390	30.89	193	5,769	29.89
Glass and enamel	—	—	—	548	18,110	33.05
Other	—	—	—	125	4,625	37.00
Total	7,815	$258,680	$33.10	44,532	$1,397,159	31.37

[a] U. S. Bur. Mines, Mineral Market Report No. 1392, April 22, 1946.

TABLE 76.—GENERAL IMPORTS (RECEIPTS) OF FLUORSPAR INTO THE UNITED STATES, 1943–45, IN SHORT TONS[a]

Date	Containing more than 97 percent calcium fluoride				Containing not more than 97 percent calcium fluoride				United Kingdom	Total
	Mexico	Newfoundland	Spain	Canada	Mexico	Newfoundland	Spain	Union of South Africa		
1943	1,854	—	—	—	18,661	7,144	15,540	570	—	43,769
1944	2,779	2,352	—	70	60,843	13,720	9,177	3,557	1	92,499
1945:										
January	703	—	1,445	65	6,246	—	3,233	—	—	11,692
February	371	—	—	—	2,929	—	—	—	—	3,300
March	1,100	403	827	106	5,580	—	—	—	—	8,016
April	590	1,680	—	58	4,121	—	3,858	—	—	10,307
May	777	1,680	—	136	6,757	—	3,854	—	—	13,204
June	469	1,904	—	122	9,810	—	—	—	—	12,305
July	172	2,016	—	119	7,692	—	5,093	—	—	15,092
August	641	—	—	64	4,728	—	7,483	—	—	12,916
September	488	—	—	—	3,890	—	—	—	—	4,378
October	59	—	—	—	1,125	1,288	—	—	—	2,472
November	57	—	—	1,691	1,877	—	1,530	—	—	5,155
December	53	—	—	—	1,836	—	—	—	—	1,889
Total	5,480	7,683	2,272	2,361	56,591	1,288	25,051	—	—	100,726

[a] U. S. Bur. Mines, Monthly Fluorspar Report No. 22, March 7, 1946.

via Gulf trade to the East coast, because of the prevailing high freight rates on rail shipments into the Chicago area.

However these factors offer little competition to the Illinois-Kentucky fluorspar because of (1) the relatively small amounts of fluorspar available from abroad, (2) the large number of industries in the Middle West consuming fluorspar, and (3) the fact that more than 75 percent of the fluorspar produced in the United States comes from Illinois and Kentucky.

Although the United States became practically independent of foreign fluorspar during the 1930's, the war years found the government encouraging Mexico to develop

TABLE 77.—CONSUMPTION OF FLUORSPAR (DOMESTIC AND FOREIGN) IN THE UNITED STATES, 1943–44, AND JANUARY-DECEMBER 1945, BY INDUSTRIES[a]
(In short tons)

Date	Steel	Hydrofluoric acid	Glass	Enamel	Aluminum and Magnesium	Other	Total
1943	234,148	113,614	20,592	1,726	5,783	13,022	388,885
1944	230,201	129,553	27,315	2,547	7,081	13,473	410,170
1945:							
January	18,736	10,957	1,830	202	214	1,124	33,063
February	17,861	10,008	2,100	210	223	940	31,342
March	20,522	12,130	2,998	247	308	1,214	37,419
April	19,185	11,691	2,814	202	257	953	35,102
May	19,355	11,553	3,020	249	185	1,061	35,423
June	17,051	11,776	2,739	245	151	835	32,797
July	16,455	12,412	2,438	302	166	1,017	32,790
August	13,643	10,064	2,858	282	181	732	27,760
September	13,564	4,999	2,726	283	82	738	22,392
October	13,974	4,576	2,595	402	95	655	22,297
November	14,490	4,893	3,025	566	51	669	23,694
December	14,458	4,305	2,641	492	50	900	22,846
Total	199,294	109,364	31,784	3,682	1,963	10,838	356,925

[a] U. S. Bur. Mines, Monthly Fluorspar Report No. 22, March 7, 1946.

large deposits, with the result that in both 1944 and 1945 Mexico exported approximately 60,000 tons to the United States. This was largely a low grade ore which had to be processed in flotation mills after it reached this country.

A history of the fluorspar consumption, both domestic and foreign, by industries, is presented graphically for a twenty-year period, 1926-1945, in figure 20. This shows the marked increase in the consumption of fluorspar for the manufacture of hydrofluoric acid during the war period. It is noteworthy that the post-war months of 1945 showed a sudden drop in consumption for this purpose almost immediately following the end of the war. See table 77.

The year 1945 marked the shift in fluorspar consumption from almost entirely military purposes to a resumption of civilian use. During the early part of 1945, the picture had changed very little from that of 1944. The manufacture of hydrofluoric acid, used in the manufacture of artificial cryolite and aluminum fluoride, high octane gasoline, refrigerating mediums (the freons), insecticides, and other chemical products necessary for the successful prosecution of the war, was sufficiently great to again give it second place in the consumption of fluorspar for 1945.

Anhydrous hydrofluoric acid, the largest single use of which was as a catalyst in the production of aviation alkylate used in the manufacture of high-octane gasoline during the war, appeared toward the close of 1945 to be relinquishing its place as a catalyst to sulphuric acid because of the greater cost involved. Anhydrous hydrofluoric acid toward the end of the year was reverting almost exclusively to use in chemistry where it appears to have a bright future. Its use in freons as refrigerants and as the propellent in insecticidal bombs continued to be important. A larger proportion will be used in refrigeration than in insecticides for civilian use.

Although almost 90 percent of aqueous hydrofluoric acid is used in the production of fluorine chemicals, some is used directly in such processes as pickling stainless steel and in cleaning sand from metal casings.

Flourine compounds are important sand agents in the casting of aluminum. These agents fill the voids in sand molds by volatilizing when heated, thus preventing oxidadation of the metal. Roughly 1 to 5 percent, by weight, of either ammonium fluo-

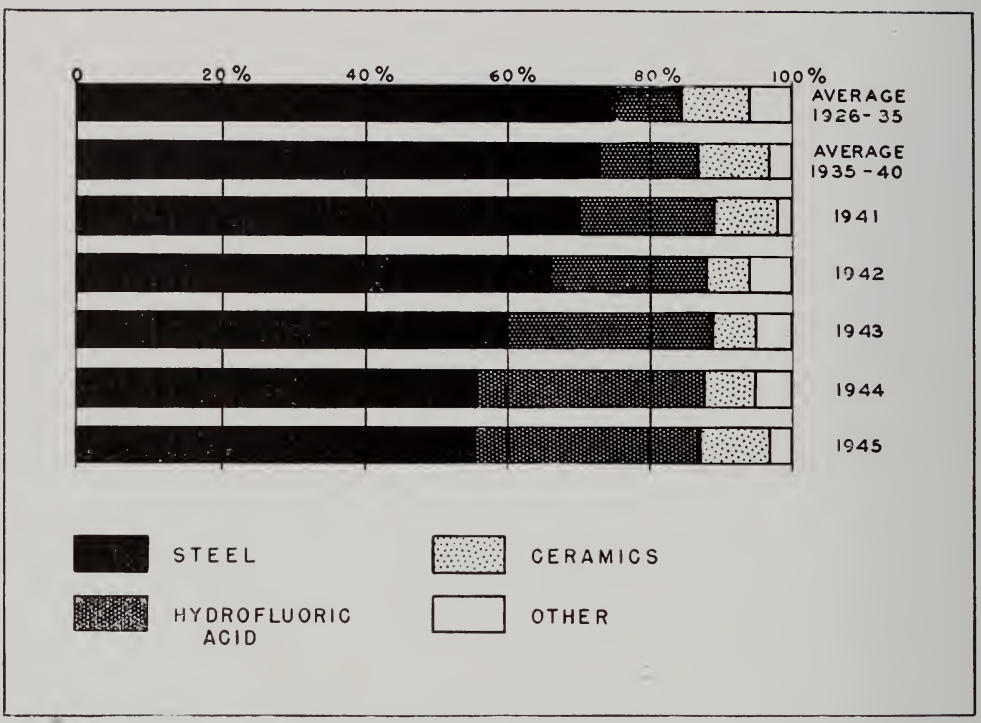

FIG. 20.—Percentage consumption of fluorspar (domestic and foreign) by industries for twenty-year period 1926–1945.

silicate or ammonium bifluoride and fluoborate is used in the sand mixture. Lithium fluoride has made aluminum welding practical because it serves as a powerful fluxing agent, is non-hygroscopic and highly insoluble. Sodium fluoride is used in the production of rimmed steel where heats are sluggish and might result in second-grade ingots. Potassium fluoride, bifluoride, and fluoborate have become important as fluxes in silver soldering. Metal fluoborates, of which lead is best known, are used in electroplating.

As the fluorspar industry shifted its attention from military to civilian needs, it found itself confronted with supplying less fluorspar on the whole but a larger percentage of acid-grade spar. Thus it became concerned primarily with flotation mills and the recovery of high-grade concentrates rather than with mining. Stocks on hand at the close of the year showed that in the sudden shift to civilian use, consumption had not been able to keep pace with production.

Fluorspar, which is a nonmetallic crystalline mineral, is technically pure calcium fluoride, CaF_2, containing 48.7 percent fluorine and 51.3 percent calcium by weight. However, the term fluorspar is generally used to designate the ore from which the mineral is obtained, and is graded according to its calcium fluoride content, as metallurgical, acid or ceramic. Specifications for the chief commercial grades of fluorspar are given in table 78.

The ceramic industry again held third place in 1945 in fluorspar consumption with an even greater percentage than in 1944. However, this picture will probably be somewhat changed in the near future as we again begin using metal containers in many ways in which glass was used during the war.

Fluorspar is used in the manfacture of opal, opaque, and colored glass to be used in such finished commodities as lamp globes, bulbs, soda fountains, containers for food, toilet, and medicinal preparations, and lavatory fixtures. From 50 to 500 pounds of fluorspar are used per 1000 pounds of sand

TABLE 78.—SPECIFICATIONS OF CHIEF COMMERCIAL GRADES OF FLUORSPAR[a]

Standard

	CaF_2	SiO_2	S	Fe_2O_3
Metallurgical	85.5	5.0	0.3	—
Acid	98.0	1.0	0.03	—
Ceramics	95.0	2.5	—	0.12

Presently Accepted

	CaF_2	SiO_2	S	Fe_2O_3
Metallurgical	[b]	—	0.3	—
Acid	97.5	1.0	0.05	—
Ceramic	—	—	—	—

Effective CaF_2 Content	Base price per ton
70% or more	$33.00
65% but less than 70%	32.00
60% but less than 65%	31.00
Less than 60%	30.00

[a] Howard G. Hymer, Fluorspar: Chem. & Met. Eng., August, 1945.
[b] Effective CaF_2 content is determined by deducting 2.5 times the silica content from the CaF_2 content.

in the manufacture of glass, depending upon the type of product desired. Substitutes for fluorspar have been tried but offer little competition either because of higher cost or lower efficiency. An even higher grade of fluorspar (60 percent through a 100-mesh screen) is required for the manufacture of vitreous enamel than for opaque or colored glass (55 percent through 100-mesh screen). These commodities include sinks, bathtubs, stove parts, refrigerators, toilet fixtures, etc., where vitreous enamel coatings are applied to iron or steel. Similar coatings are also applied to pottery, brick, and tile. Since civilian consumption of such products was so drastically curtailed during the war, it appears that the market for this mineral for enameling purposes will show a marked upward trend as soon as civilian manufacture of these commodities is again possible.

A new Du Pont product, tetrafluoroethylene, known by the trade name "Teflon," was produced for war purposes as early as 1943 and now gives promise of finding a ready, although limited, civilian market in the field of plastics. The properties upon which many important uses will be based are its extreme resistance to heat, its excellent electrical properties, and its chemical inertness. Its chemical resistance is unequalled by any other plastic.[2]

Teflon in thin sections is transparent but in larger pieces it is waxy in appearance and white or gray in color. It can be machined by sharp wood-working or metal-working tools, and sheet stock can be worked on a punch press.

Another newly developed fluorine product is a rat poison which is so toxic to man that it still has not been released for civilian use. I. N. Gabrielson predicts its release under regulations that will guarantee its safe and rational use.[3]

For the past several years, the research activities of the majority of companies were largely directed toward supporting the war effort. At the close of 1945 most government contracts had been cancelled, and research again resolved itself to a private competitive basis. In view of this long-range

[2] Technical Service Report, E. I. DuPont de Nemours & Company, Inc., April 9, 1946.
[3] Chemical Age, February 23, 1946, "Fluorine Compounds."

research, programs in the fluorine industry were virtually at a standstill during the post-war months of 1945. Most of the companies stand ready to launch extensive research programs as soon as economic conditions become somewhat stabilized and the future trend of the fluorspar industry more certain. There is little doubt that chemistry will utilize an increasingly large percentage of fluorspar in various fluorine compounds. Some of these with remarkable possibilities are even now waiting to go on the market, and until that time further information must be withheld.

Chemical and Engineering News of July 25, 1946, has the following to say concerning the future of fluorine:

"Fluorine, the most chemically active element known, has been put on the market for the first time by the Pennsylvania Salt Manufacturing Company, Philadelphia, it was announced recently. (This refers to the elemental fluorine.) It has defied isolation for 73 years and has heretofore been nothing more than a laboratory curiosity. It is now available in steel pressure cylinders on a limited commercial basis for experimental use by manufacturers and researchers. Scientists foresee a whole new field of chemistry in the development of fluorine compounds. Some of the outstanding ones are:

"A nonflammable, nontoxic liquid with a high enough boiling point and specific gravity that it can replace mercury in the present mercury vapor boiler, making the most efficient vapor engine practical and safe.

"A gas, already developed but requiring elemental fluorine to manufacture, which is a nearly perfect insulator for high voltages used in x-ray and nuclear physics.

"A lubricating oil so stable that it will not oxidize or break down under any present engine or mechanical operations and will make possible gears and engines heretofore only dreamed of by designers because no lubricant made could withstand their pressure and friction.

"An insecticide, already made by the Germans but too costly to be practical with present methods.

"Other uses for fluorine compounds now definitely within the realm of possibility include heat transfer and dielectric media, other insecticides, fungicides, fumigants, germicides, stable solvents, anesthetics, fire extinguishers and fireproofing materials, resins and plastics, and weed killers."

Fluorspar in Illinois

Although the mining of fluorspar in Illinois in 1945 showed for the second consecutive year a decrease in tonnage, Illinois still maintained its rank as chief producing state in the nation. Illinois in 1945 produced 151,400 net tons, or 45 percent of the total United States production, as against 43 percent in 1944.

Shipments of fluorspar from Illinois mines from 1939 to 1945 are shown in table 79. The total dollar value of the fluorspar shipped decreased from $5,954,991 in 1944, to $5,014,807 in 1945, although the average price per ton was slightly higher than in 1944.

The distribution of shipments from mines, by kinds and uses, is shown in table 80 for 1943-1945. Although in 1944 hydrofluoric acid for the first time surpassed steel in total consumption of fluorspar, the figures for 1945 show that steel again regained supremacy as the largest consumer by using 65,440 tons in 1945 as compared with 55,688 tons consumed in the manufacture of hydrofluoric acid. The ceramic industry, however, which showed a marked increase in 1944, showed a further increase in 1945, using 19,182 tons as compared with 14,058 in 1944.

Annual shipments and average value of fluorspar from Illinois since 1913 are presented graphically in figure 21, showing the effect of two world wars on the industry. Although we are now experiencing a period of decreased production and consumption such as followed the first world war, it is unlikely that it will again reach the low ebb of the early 1920's because of the rap-

TABLE 79.—FLUORSPAR SHIPPED FROM ILLINOIS MINES, 1939–1945[a]

Year	Tons	Value at mines		Year	Tons	Value at mines	
		Total	Average			Total	Average
1939	75,257	$1,638,693	$21.77	1943	198,789	$6,292,789	$31.66
1940	104,698	2,313,747	22.10	1944	176,259	5,954,991	33.79
1941	133,333	3,047,247	22.85	1945	147,251	5,014,807	34.06
1942	161,949	4,306,750	26.59				

[a] Compiled from canvass made by the U. S. Bur. of Mines.

TABLE 80.—FLUORSPAR SHIPPED FROM MINES IN ILLINOIS, 1943–1945, BY KINDS AND BY USES[a]

Kind of Fluorspar	1943			1944			1945			Percent change in amount from 1944
	Amount (tons)	Value at mines		Amount (tons)	Value at mines		Amount (tons)	Value at mines		
		Total	Av.		Total	Av.		Total	Av.	
Metallurgical	84,929	$2,482,319	$29.23	64,072	$1,925,399	$30.05	63,909	$1,951,087	$32.46	− 2.5
Flotation concentrates	104,131	3,810,470	33.47	101,105	4,029,592	35.98	83,342	3,063,720	36.76	−25.7
Ground	9,729			11,082						
Total	198,789,	$6,292,789	$31.66	176,259	$5,954,991	$33.79	147,251	$5,014,807	$34.06	−16.5
Use										
Steel	89,789	$2,624,000	$29.22	71,516	$2,143,780	$29.97	65,440	$1,988,012	$30.38	− 8.5
Foundry	1,204	28,632	23.78	856	23,571	27.42	648	20,971	32.36	−24.3
Glass and enamel	6,741	227,849	33.80	14,058	512,420	36.45	19,182	679,056	34.88	+26.8
Hydrofluoric acid	89,599	3,030,442	33.82	81,493	2,974,892	36.55	55,688	2,101,722	37.56	−31.7
Other industries	9,123	309,737	33.95	7,328	262,353	35.80	5,518	196,745	35.65	−24.7
Total	196,456	$6,220,660	$31.66	175,251	$5,917,016	$33.76	146,476	$4,986,706	$30.63	−16.4
Exported	2,333	72,129	30.91	1,008	37,975	37.67	775	28,301	36.55	−23.3
Total	198,789	$6,292,789	$31.66	176,259	$5,954,991	$33.79	147,251	$5,014,807	$34.06	−16.5

[a] Compiled from canvass made by the U. S. Bur. of Mines.

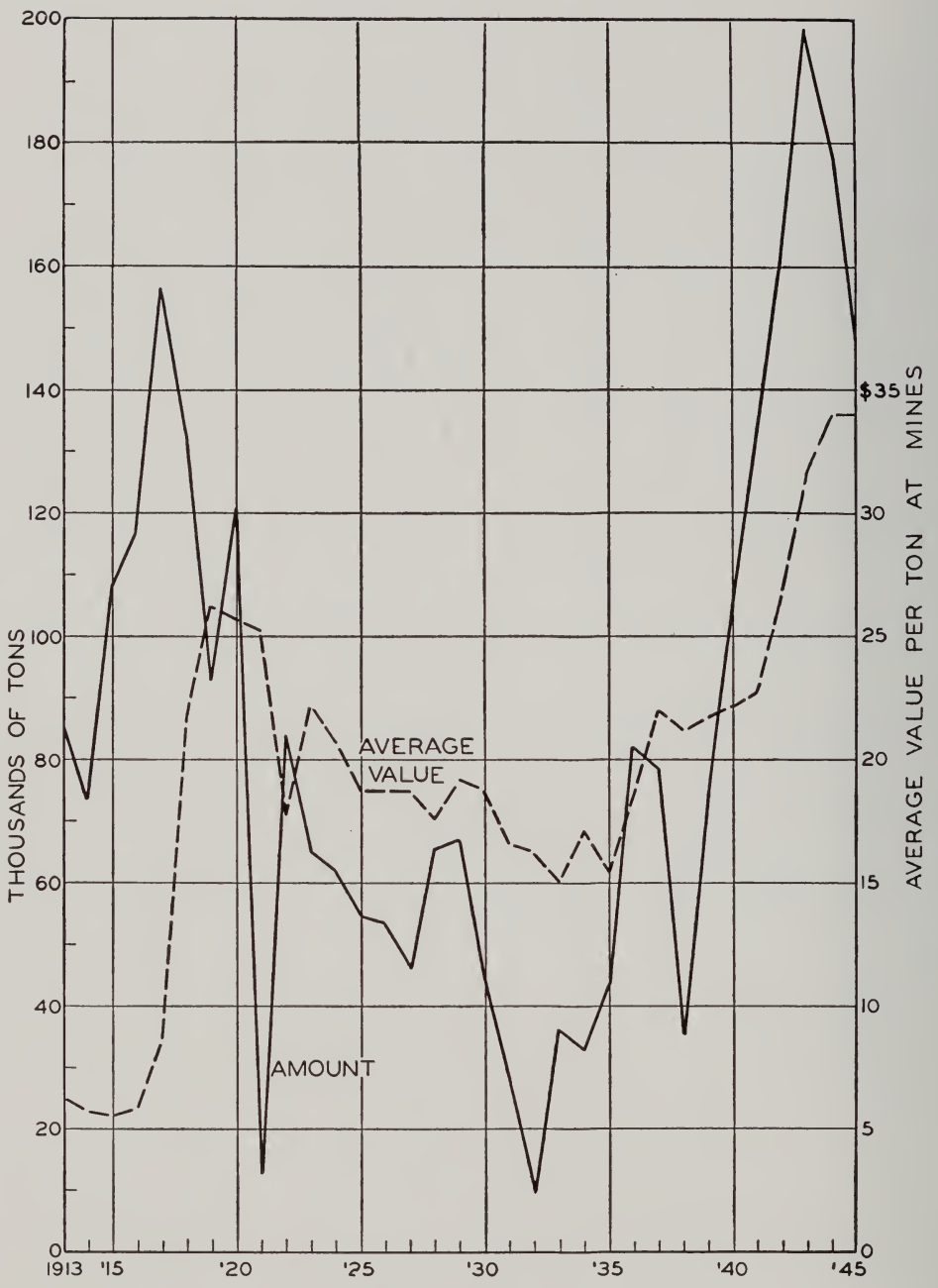

FIG. 21.—Fluorspar, annual shipments and average value, from Illinois mines, 1913–1945.

idly increasing demand for fluorspar in civilian industry, particularly in the field of chemistry.

The principal mills in Illinois which are equipped to produce acid or ceramic grade fluorspar are listed in table 81.

Some months before our entry into the war it was realized that the fluorspar deposits of Illinois were to play an increasingly important part in national affairs. Recognizing the desirability of increasing and bringing up-to-date the knowledge of the fluorspar producing district in Illinois, the Illinois State Geological Survey began a general survey of the mines and prospects of the district, noting location and principal features of each, as well as a revision of the geologic map of that section. This study has resulted in the accumulation of a sizeable body of additional geologic knowledge of the fluorspar district. When this knowledge is made generally available to the public, it will constitute a valuable compilation of geologic data and an accurate record of the character of the ore bodies in the various mines for future use. In years to come, prospective mine operators or investors will have more than local, and possibly biased, reports on which to base their decisions, and in case of another national emergency, the data now on hand may be of considerable time- and money-saving value.

Table 81.—Principal Mills in Illinois Equipped to Produce Acid or Ceramic Grade Fluorspar[a]

Aluminum Ore Co.	Rosiclare
Mahoning Mining Co.	Rosiclare
Rosiclare Lead & Fluorspar Mining Co.	Rosiclare
Hillside Fluorspar Mines	Rosiclare
Victory Fluorspar Mining Co.	Elizabethtown
Cave-in-Rock Spar Co.	Elizabethtown
Jas. W. Patton & Sons	Elizabethtown
Crystal Fluorspar Co.	Elizabethtown
Minerva Oil Co.	Cave-in-Rock

[a] Howard G. Hymer, Fluorspar, Chemical & Metallurgical Engineering, August, 1945.

PRICES

Present prices remain unchanged from 1944 at $37 per ton for acid and ceramic-grade spar, and $30-$33 per ton for metallurgical spar. Prices for metallurgical spar vary according to the "effective CaF_2 content." The average price per ton for Illinois spar in 1945 was $34.06, an increase of $0.27 over the preceding year. Current prices are to be compared with the 1940 average of $25.36 per ton for acid spar and $18.42 for metallurgical spar. The increased prices have been allowed by Office of Price Administration to permit wage increases and as an incentive to increased production.

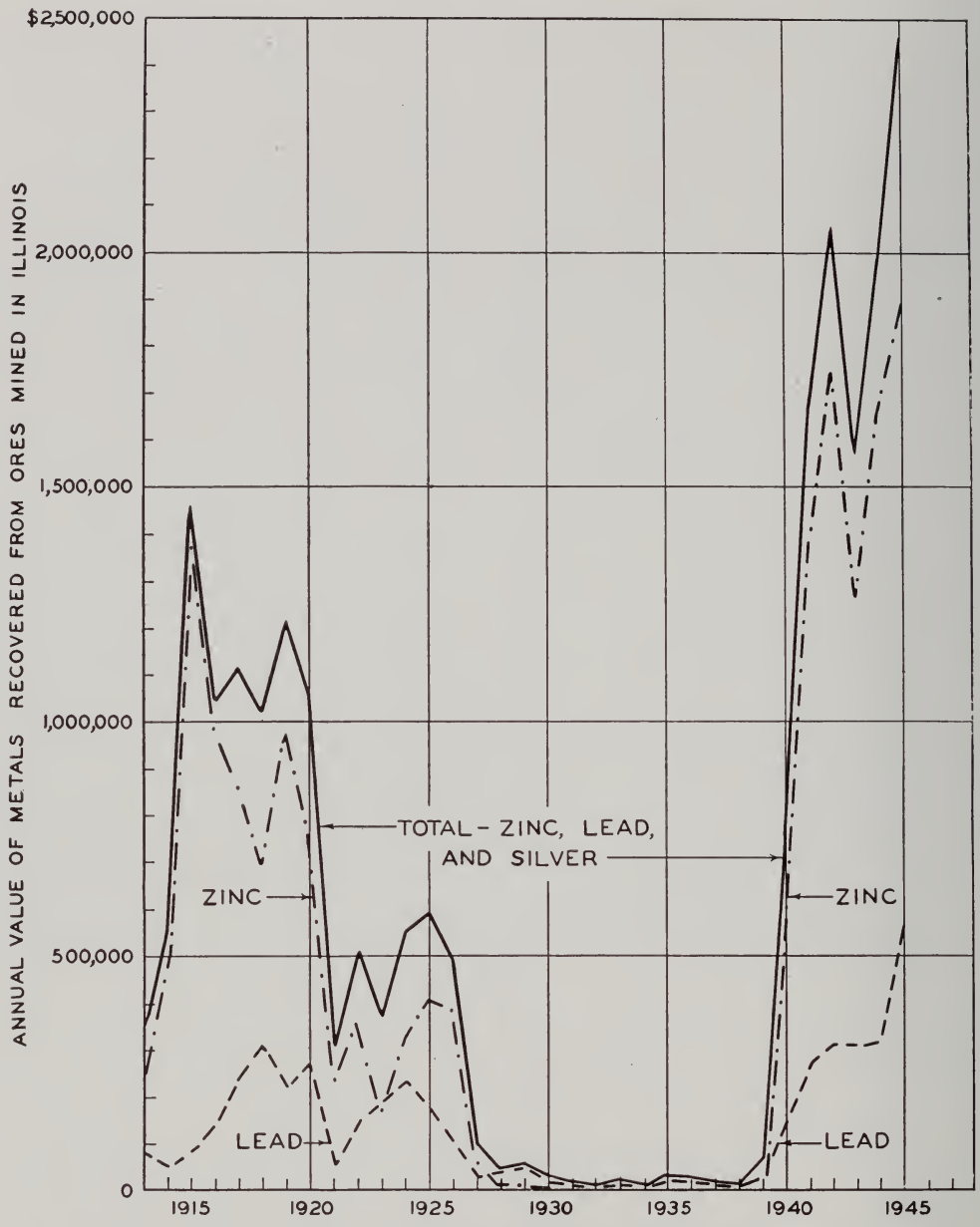

FIG. 22.—Annual value of metals recovered from ores mined in Illinois, 1913–1945.

ZINC, LEAD AND SILVER

Production of metallic ores in Illinois established a new all-time high record for value in 1945, when zinc, lead,, and silver, recovered from ores mined in the State, had a value of $2,467,500, as determined by the U. S. Bureau of Mines. This was an

increase of 25 percent over the 1944 value, and is 20 percent more than the value for 1942, the largest previous annual total.

Zinc metal recovered from Illinois ore amounted to 8,235 tons, valued at $1,894,000; lead amounted to 3,327 tons, valued at $572,000; and silver to 1,748 troy ounces worth $1,200. Zinc showed an increase of 13 percent over the previous year; and lead showed an increase of 69 percent. Data for 1943, 1944, and 1945 are given in table 82, and the annual values of metals produced from Illinois ores since 1913 are shown in figure 22. This indicates the effect on this industry of the demand from two world wars, the industrial depression from 1928 to 1938, and the critical shortage of zinc and lead since 1939.

Southern Illinois

Hardin and Pope counties, in extreme southern Illinois, produced the greater part of zinc and lead, and all silver for the State's record in 1945. The metallic ores of this district occur mainly in association with the nonmetallic mineral fluorspar, and their production in general varies with the production of fluorspar. Recently improved recovery of the metals from the ore has increased the relative production of the metals.

Northwestern Illinois

Jo Daviess County, in the northwest corner of Illinois, the earliest source of lead in the State, has greatly increased its production of zinc and lead during the past five years. The Illinois Geological Survey has cooperated with the U. S. Bureau of Mines in prospecting for new deposits of zinc and lead ore. The ore possibilities of this district are discussed in the new publication of the Illinois Geological Survey, Report of Investigations No. 116, entitled "Geological Aspects of Prospecting and Areas for Prospecting in the Zinc-Lead District of Northwestern Illinois," by H. B. Willman, R. R. Reynolds, and Paul Herbert, Jr.

Table 82.—Zinc, Lead, and Silver, Recovered from Ores Mined in Illinois, 1943–1945[a]

Metal	Unit	1943			1944*			1945			Percent change in amount from 1944
		Amount	Value[b]		Amount	Value[b]		Amount	Value[b]		
			Total	Av.		Total	Av.		Total	Av.	
Zinc	Tons	5,851	$1,263,816	$216.00	7,262	$1,655,736	$228.00	8,235	$1,894,050	$230.00	+13.4
Lead	Tons	2,043	306,450	150.00	1,971	315,360	160.00	3,327	572,244	172.00	+68.8
Silver	Troy ozs.	2,153	1,531	0.711	2,437	1,733	0.711	1,748	1,243	0.711	−28.3
Total		—	$1,571,797	—	—	$1,972,829	—	—	$2,467,537	—	[c]+25.1

* Revised figures.

[a] U. S. Bureau of Mines, Minerals Yearbooks, and Mineral Market Reports.

[b] Value for zinc and lead based on yearly average price received by producers, including bonus payments by Metals Reserve Co. for overquota production, as determined by U. S. Bureau of Mines. Value for silver based on U. S. Treasury buying price for newly mined silver.

[c] Percent change in value from 1944.

MISCELLANEOUS MINERALS

Table 83.—Miscellaneous Minerals,[a] Sold or Used by Producers in Illinois, 1942–1945[b]

Year	Amount tons	Value at Plants	
		Total	Average
1942	34,179	$149,327	$4.37
1943	28,199	117,895	4.18
1944	*21,250	* 99,262	*4.67
1945	17,023	83,814	4.92

* Revised figures.
[a] Minerals included: peat, pyrites, and sulfur from gas.
[b] Compiled from joint canvass made by Illinois Geological Survey and U. S. Bureau of Mines.

Included in this group are several mineral materials produced in Illinois by less than three producers for each material, so that details of production cannot be published without revealing individual operations.

Peat is produced in northern Mason County for mixed fertilizer and other purposes. Illinois ranks third among the states in the production of peat.

Pyrites (coal brasses) are produced in Henry County from coal-cleaning operations.

Sulfur, as elemental sulfur, is recovered as a byproduct in the liquid purification of gas.

The annual total amount and value of these mineral materials, which were sold or used by producers in Illinois for 1942-1945, are given in table 83. The total for 1945 amounted to 17,000 tons, valued at the plants at $83,800.

Table 84.—Minerals Processed, but Mostly Not Mined in

Kind	Unit	1943*		
		Amount	Value at plants	
			Total	Av.
Coke and byproducts (sold or used)[b]				
Coke	tons	3,660,374	$29,661,935	$ 8.10
Coke breeze	"	338,157	939,489	2.78
Coke-oven gas	M cu.ft.	48,221,171	7,100,108	.147
Ammonia (sulfate equivalent)	lbs.	97,436,000	1,154,673	.012
Tar and derivatives	gals.	55,668,894	2,767,376	.05
Light oil and derivatives	"	9,619,540	1,297,757	.135
Napthalene	lbs.	1,736,177	53,185	.031
Other byproducts	gals.	54,522	42,304	.776
Total coke and byproducts	—	—	43,016,827	—
Packaged fuel[d]	tons	3,081	38,445	12.48
Pig iron	"	5,920,894	126,910,295	21.43
Sulfuric acid[e]	"	259,302	2,481,520	9.60
Slab zinc[g]				
From Illinois ore[h]	"	5,851	1,263,816	216.00
From out-of-state ore	"	215,829	46,619,084	216.00
Total zinc smelted in Illinois	"	221,680	47,882,900	216.00
Miscellaneous minerals processed[i]	"	35,855	2,872,624	80.12
Total minerals processed[b] but mostly not mined in Illinois[b]	—	—	$221,938,795	—

* Revised figures.
[a] Compiled from canvass made by U. S. Bureau of Mines.
[b] See table 39—Coke and Byproducts.
[c] Percent change in value from 1944.
[d] See table 37—Packaged Fuel.
[e] 60° Baumé—from zinc smelting and sulfur.

MINERALS PROCESSED, BUT MOSTLY NOT MINED, IN ILLINOIS

Included in this group are mineral materials which are processed in Illinois, but mostly are mined in other states. The amount and value of these materials, sold or used by processors in Illinois for 1943-1945, are given in table 84, as far as the data are available.

Coke and byproducts produced in Illinois are made in the byproduct ovens, most of it from coal mined in the eastern bituminous fields. Coke produced from Illinois coal is not differentiated from the other, so table 84 gives the entire amount of coke made in Illinois. Details of coke products are given in this report on pages 62-64.

Packaged fuel is a material processed in Illinois from the fines that result from the storage and handling of eastern coal. Details are given in the section on "Fuel Briquets and Packaged Fuel" (see p. 61). Data cannot be published on the production of fuel briquets in Illinois without revealing individual operations.

Pig iron, a basic product in the steel industry, is produced in Illinois from iron ore mined in the Lake Superior district and shipped in by water.

Sulfuric acid is a material produced in Illinois as a byproduct of the smelting of zinc ores and is also produced from sulfur at zinc plants.

ILLINOIS, SOLD OR USED BY PROCESSORS IN ILLINOIS, 1943–1945[a]

1944*			1945			
Amount	Value at plants		Amount	Value at plants		Percent change in amount from 1944
	Total	Av.		Total	Av.	
3,987,614	$34,638,850	$ 8.70	3,777,321	$32,635,948	$ 8.64	− 5.3
327,973	971,664	2.96	359,509	1,063,560	2.96	+ 9.1
54,821,918	6,954,162	.127	50,880,910	6,374,791	.125	− 9.0
97,613,807	1,144,980	.012	97,816,870	1,199,381	.012	+ 0.2
39,980,566	2,191,466	.055	37,524,451	2,035,976	.054	− 6.2
11,221,493	1,356,696	.121	9,771,712	1,248,430	.128	− 12.9
1,330,600	23,322	.017	1,641,060	30,490	.019	+ 23.3
214,144	49,658	.232	279,047	53,868	.193	+ 30.3
—	47,330,798	—	—	44,642,444	—	[c]− 5.7
1,837	23,037	12.54	16,690	186,593	11.20	+808.0
5,686,397	118,953,078	20.92	5,061,368	116,303,897	22.98	− 11.0
234,245	2,328,395	10.00	216,482	2,186,468	10.10	− 7.6
7,262	1,655,736	228.00	8,235	1,894,050	230.00	+ 13.4
148,100	33,766,764	228.00	116,669	26,833,850	230.00	− 21.2
155,362	35,422,500	228.00	124,904	28,727,900	230.00	− 19.6
35,201	2,724,091	77.39	38,387	2,892,652	75.35	+ 9.1
—	$205,126,163	—	—	$193,045,904	—	[c]− 5.9

[f] Subject to revision.
[g] Value for zinc based on yearly average price received by producers, including bonus payments by Metals Reserve Co. for overquota production, as determined by U. S. Bureau of Mines.
[h] Figures for zinc smelted from Illinois ore are not included in "Total minerals processed" in this table, but are included in table 82.
[i] Includes ground feldspar, magnesium compounds, and mineral pigments; also includes metallic abrasives in 1945.

Slab zinc, a basic product in the zinc industry, is produced in Illinois from ores mined in Illinois and from ores mined in other states. Zinc recovered from Illinois ores is included in table 82. That recovered from out-of-state ores is included in "Total minerals processed" in table 84.

Ground feldspar is made in Illinois from crude feldspar which is mined in South Dakota. It is used in the manufacture of whiteware and enamels and for other purposes. Data cannot be published on feldspar grinding in Illinois without revealing individual operations, but are included in "Miscellaneous minerals processed," table 84.

Magnesium compounds are processed in Illinois from out-of-state dolomite. Data on these are included in "Miscellaneous minerals processed," table 84, to avoid revealing individual operations.

Mineral pigments are produced in Illinois from crude mineral earth pigments and iron oxide pigments from various sources. Data on these are included in "Miscellaneous minerals processed," table 84.

Pig lead is made in Illinois by smelting lead ores; that obtained from ores mined in Illinois is given in table 82. Data on pig lead produced in Illinois from ores mined in other states are not available.

Expanded vermiculite is produced in Illinois by heat-treating crude vermiculite which is mined in the West. Production figures are not available.

Alumina, phosphates, and other processed mineral materials are produced in Illinois in large amounts, but data for them are not available.

The total 1945 value of mineral materials which were processed in Illinois but mostly mined in other states, as given in table 84, amounted to $193,045,900, which was 6 percent less than the corresponding total for 1944.

The values of pig lead, expanded vermiculite, alumina, phosphates, and other mineral materials, if known, would greatly increase the total given in table 84.

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